227	G.V.Subrahmanyam		Analysis of three port Circulator Using Artificial neural networks	2019	ISSN: 1556-5068	**Yes**	SSRN	https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3357754
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229	Mr. N Raja Sekhar	Engineering Mathmatics-III Second Edition		2019	978-93-8681-961-1	**Yes**	BS Publications	https://www.bspublications.net/srch_books.php?srch=s
230	Dr. K. Shirin Bhanu Mrs. G. loshma		Prediction of Crop Production using Ada boost Regression Method	2018	1742-6596	**Yes**	IOP Publishing Ltd	Prediction of crop production using adaboost regression method - IO
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232	Mr. D. Ganesh		Prediction of Crop Production using Ada boost Regression Method	2018	1742-6598	**Yes**	IOP Publishing Ltd	Prediction of crop production using adaboost regression method - IO
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234	Mr. N Raja Sekhar	Engineering Mathmatics-I Second Edition		2018	978-93-5230-140-9	**Yes**	BS Publications	https://www.bspublications.net/book_detail.php?bid=1163

A Review on Breast Cancer Detection for Histopathology Images Using Deep Learning

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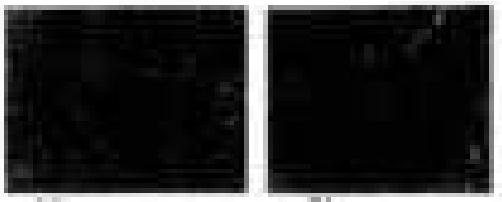
Abstract—A prevalent and deadly kind of cancer in women is breast cancer. The likelihood of surviving breast cancer rises if it is detected early. Breast cancer diagnosis and treatment are greatly aided by breast histopathology image analysis. This results in the development of efficient Deep Learning algorithms in this field, which helps histopathologists achieve successful analytical results. This research presents an overview of methodologies for deep learning-based image analysis of breast histopathology. Histopathology image datasets that are frequently utilized like BreaKHis, MITOS dataset, Camelyon etc. are analyzed. Finally, various performance metrics for assessing the effectiveness of breast cancer prediction algorithms are presented. The purpose is to review current deep learning models for detection and classification of breast cancer using histopathological images.

Keywords: Breast cancer, detection, Deep learning, histopathology images, feature extraction, classification

I. Introduction

Breast cancer is the very frequently diagnosed reason for women deaths due to cancer [1]. In accordance with estimates from the World Health Organization, every year 2.1 million women all around the world identify breast cancer symptoms. Breast cancer is reported to have claimed 685,000 lives in women in 2020, accounting for 15% of various cancer deaths in women [2]. Up to 30% of cases are likely to lead to a diagnosis, making it the most typical kind of cancer women in the US [3]. Breast tissue exists in four different forms: fat lobule, connective tissue, milk, and ventral. Benign tissue is a term used to describe a slight change in the breast's structure that is not cancerous and, in most situations, poses no threat to health. No other organs are affected by in-situ cancer. It only affects the mammary duct lobule system. In-situ cancer is curable if detected at the beginning. A malignant tumour known as an invasive carcinoma frequently metastasizes to other organs. Breast temperature monitoring[3], ultrasound[4], CT Scan, PET Scan[5], mammography[6], and biopsy are some of the techniques used to identify breast cancer.

The optimal standard is usually considered to be pathological diagnosis [9]. To create the histopathology slides from the patient's breast cancer tissues, the lab technicians first stain the cell nuclei and non-nuclear components with hematoxylin to spotlight the various regions of cellular features and clear tissue structures [40], [41]. The microscopic analysis of the stained breast cancer biopsy tissues is then used to create digital histopathology images [46], [47]. Hematoxylin gives the nucleus a deep purple tint, whereas eosin gives other structures a pink color. Fig. 1 shows images of normal breast tissue and diseased breast tissue which are stained with hematoxylin and eosin.



(a) (b)

Fig. 1. Fig1. hematoxylin and eosin Stained images of (a) normal tissue (b) diseased tissue

The slides go under a microscope for examination by a histopathology expert to identify the traits and features of the tissues [10]. The histopathologist traditionally examines the tissue slices with only their eyes, and they manually assess the visual data using their past medical expertise. The intricacy and variety of histopathological pictures, however, can make this manual analysis time-consuming. The impartiality of this manual analysis procedure is variable. It largely depends on the workload and level of skill of the histopathologist.

The following four components make up the generalized system architecture for finding breast cancer:

- Image preprocessing: The subsequent stages of detection may be significantly impacted by the imaging artifacts and consistency brought on by various imaging settings. For better detection performance, it is required to eliminate the unpredictability and artifacts with picture preparation techniques.
- Region of Interest (ROI) area segmentation: Before applying detection techniques to an image, the most significant portions must be extracted because we only consider the relevant portions of the entire slide image while doing detection.
- Feature extraction: It is challenging to use raw image data directly for categorization since they often have high dimensions. The classification problem might be better served by feature extraction, which converts unprocessed data into a feature space with significantly smaller dimensions.
- Classification: In this phase removed features are sent into classifiers, then labelling the attributes of Region of Interest as positively or negatively is done for detection.

II. Literature Review

The development of medical research gets the advantage from the use of deep learning techniques. These are specifically useful for cancer image identification and categorization [11]. A collection of multiple layer types,

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Presented/Published a paper entitled Research on Big Data Tools and applications

in AICTE Sponsored " National E-CONFERENCE On Data Engineering and Communication Technology" (NCDECT) 2023 held on 24th and 25th February, 2023.

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Eco-friendly carbon synthesis from waste PET bottles to reduce plastic pollution and its environmental impact: a review

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Abstract—Plastics are inexpensive and durable. Plastics are becoming increasingly popular, but most of them are non-biodegradable, posing a significant environmental threat. Each year, India produces around 370 lakh tonnes of waste plastic life, providing a significant potential resource. Waste plastic is currently a cause of environmental concern. We can lessen plastic waste by re-designing it as a resource. The synthesis of carbon and fuel is a novel technique in the thermal recovery of plastics waste in order to produce higher-value products. Chemical recycling is now an appealing approach for minimizing the rapid rise of plastic disposal of solid waste issues.

Plastics is just a side oil, which is processed, and this can be recovered. Plastic pyrolysis (Pyro – Heat, Lysis – breakdown) is a very effective process where plastic is exposed to high temperatures in oxygen free environment. Reuse, mechanical/chemical recycling, and energy recovery are only a few of the waste plastic management strategies that have been developed. The variety of plastic compositions makes sorting, cleaning, and separating expensive. High levels of impurities and additives in mixed plastic materials heterogeneity and inability, Using pyrolysis to convert plastic wastes to fuel is a unconventional method for disposing of them. Plastic is heat to break down, a catalyst is needed (Nickel, Zeolite etc). The products of pyrolysis process will be MPG oil,(25% gas & 5% Carbon black. After hydro-processing diesel, it can be formulated to diesel. The activated carbon can be used in preparation of carbon reinforced composites with higher order properties.

Index Terms—Pyrolysis, Catalyst, Carbon

Abbreviations: PVDC – Poly Vinylidene Chloride, PET – Polyethylene Terephthalate, PVC – Poly Vinyl Chloride, PS – Poly Styrene, PVA – Poly Vinyl Alcohol, HDPE – High Density Polyethylene, LDPE – Low Density Polyethylene, PP – Poly Propylene, PF – Phenol Formaldehyde, PI – Polyacrylate

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Modeling and static modal analysis of lathe bed using conventional and composite materials using FEM

Madhusudan Arugadoss, Hoppe Venkata Srinivas Rama, Venkata Ramesh Mandlik

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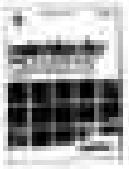

Volume 80, Part 3, 2023, Pages 691-711

Stress and deflection analysis of trench back-filling dozer blades using FEM

Harikala Ramesh Mamilla [a], Subbarama Kosuri Sudarsana [a], A. [illegible] Jayathirth Kumar Hanamaiah [b], Satya Anil Chiranji Jaisinki [a], Jayadeep Reddy Jeedipalle Rakesh Sukruta [a], Sai Naveen Tammisetty [a]

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Abstract

The objective of this paper is to improve the dozer's sharp edges in soil refilling

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Volume 90, Part 1, 2023, Pages 67-72

Stress and deflection analysis of trench back-filling dozer blades using FEM

Venkata Ramesh Mamilla[a], Subbarayudu Gowd K Suryanarayana[a], P. [illegible] Rajesh Rajamoorthy[b], Satish Kolli Chenna Reddy[a], Tirumala Hemanth Venkata Rakesh Sriram[a], Sai Praveen Tammireddy[a]

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Abstract

The objective of this paper is to improve the dozer's sharp edges in soil refilling

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Energy, exergy, economic and environmental (4E) analyses of solar still with paraffin wax as phase change energy storage material

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Energy, exergy, economic and environmental (4E) analyses of solar still with paraffin wax as phase change energy storage material

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Dual Strip Flag Microstrip Patch Antenna for Millimeter-Wave Applications

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Abstract—Here, a dual strip flag microstrip patch antenna operating in the millimeter wavelength for future 5G wireless communication is proposed. The ground plane is rectangular in shape and the flag-shaped patch with a relative permittivity of 4.4 and a substrate material of FR4, measures about 30 x 60x0.8 x 1 mm³. The impedance bandwidth of antenna design has been studied for three different 10 dB return loss. The antenna has a simple feed of [illegible] and 10 dB is [illegible] 23.6GHz, 23.9GHz, and 28.5GHz, respectively. This makes the antenna suitable for the upcoming generation of wireless communication i.e., 5G. The paper discusses the antenna in detail as well as other factors such as radiation pattern, current distribution, VSWR, and Smith Chart. The practical return loss values are [illegible] to the simulated ones, thereby validating the antenna's performance.

Keywords: 5G (fifth generation), 5G, Single frequency operation, microstrip antenna (MSA), dipole antenna, patch antenna, Voltage Standing Wave Ratio (VSWR).

1. Introduction

In today's wireless technology, we have to send great volume of [illegible] to remote systems which each possess several advantages over the previous generations but one of the major drawbacks of the present generation is the lack of frequency resources available and the continuous increase in the demand of wireless data. To overcome this, research has been started for the next generation of wireless communication i.e. 5G at the millimeter wavelength [1]. Also there is the abundance of bandwidth for high data transmission rate. The newly used frequency range for 5G is 24 - 86 GHz [2] which is expected to be launched globally by 2020. As compared to 4G, the difference in 5G network is the use of [illegible] frequency and the higher frequency range i.e. 5G ranges 28 GHz which is licensed mainly for cellular wireless systems [3]. The key drivers of 5G which focus on better data rates, greater [illegible] higher throughput, reduced latency and capability to connect a many more devices at the same time, communication services such as ultra 5G (ultra ultra strong 10 GB/s) and high definition television (HDTV), larger capacity, etc. 5G will be a combination of new technologies including significantly changing [illegible] the increase in the development of the Internet of Things [4-5] and the increasing demand for access to many applications [illegible] [6].

Dual Strip Flag Microstrip Patch Antenna for Millimeter Wave Applications

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Abstract: Here, a dual strip flag microstrip patch antenna operating in the millimeter wavebands for future 5G wireless communication is proposed. The ground plane, which is constructed on a FR4 epoxy base with a relative permittivity of 4.4 and a substrate thickness of 0.8, measures 20mm X 10mm X 1.6 mm. The simulation of proposed antenna design has been carried by HFSS 13.0. The antenna has a return loss of -20 dB, -28 dB, -17 dB, and -27 dB at 23 GHz, 24 GHz, 35 GHz, and 38 GHz respectively. This makes the antenna suitable for the upcoming generation of wireless communication e.g. 5G. This paper discusses the antenna structure as well as other factors such as radiation pattern, return loss, current distribution, VSWR, and Smith Chart. The practical results have which we have obtained is also shown in comparative analysis.

Keywords: Millimeter wavebands, 5G, high-frequency wireless antennas, FR4 flag, Microstrip patch antenna, Voltage Standing Wave Ratio (VSWR)

I. Introduction

In today's wireless technology, we have several generations of cellular communication where each possess several advantages over the previous generations but one of the major drawbacks of the presently available generations is the lack of frequency resources available and the continuous increase in the demand of wireless services. To overcome this, research has been started on the next generation of wireless communication i.e. 5G in the millimeter wavelength (30 – 300 GHz) that indicates an abundance of bandwidth for high data transmission rate. The usually used frequency range for 5G is 24 – 86.5 GHz [1] which is expected to be launched globally by 2020. As compared to 4G, the difference in 5G cellular systems is that the frequency is shifted to higher frequency range i.e. above 28 GHz where it becomes easier to achieve wider spectrum [2]. The key features of 5G which makes it better than other previous generations are – higher throughput, reduced latency, and capability to connect a many more devices at the same time, communication services such as ultra HD video streaming (UHDV) and high definition television (HDTV), larger capacity, etc. [3]. Wireless communication technology is advancing significantly towards 5G in addition to the development of the Internet of Things (IoT) and the increasing demand for access to many multimedia services over wireless broadband [4].

Advancements in 5G –

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RFID Mutual Authentication Protocol for Security Concerns and Implementation on FPGA

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Abstract—Radio Frequency Authentication (RFID) is used to track and identify different objects. Object identification is done by tracking tags using electromagnetic fields. Maintenance of cloud databases and preserving information of worldwide elements with unique code is a prior a challenging issue in recent days. In addition to this, Security concern is the major problem associated is due to hacking and many malpractice attacks. In this paper, a new bi-directional authentication scheme is developed to improve the security levels in object detection. The scheme utilizes XOR gates with 32-bit length encrypted keys to detect the tags. The serial encrypted algorithm is developed using Verilog HDL. The designed encrypted algorithm simulated in Xilinx version 14.0 and simulated using Modelsim. Further, real time implementation on FPGA is evaluated to explore the practical applications.

Index Terms—RFID, authentication, verilog, FPGA.

I. Introduction

RFID is a well know processing technique to identify a wide range of objects. Electronic Product Code (EPC) which is unique for each different object, allows the RFID to detect the object using the TAG element. EPC class 1 generation 2 (EPC1G2) is the popular authentication scheme that received globally to detect RFID tags [1]. Many reviews and literature has been done earlier regarding RFID technology presented in [2]. Application-oriented vehicle detection using RFID bar-code GPS technology is developed in [3]. EPC class 1 gen 2 disadvantages and problems lead to an enhanced version of protocol RFID protocol structure defined in [4]. The work in [4] also describes the difference between standard CDMA and Class 1 Gen 2 protocol structure. First full compatible RFID sensors are developed in order to optimize the utilization of power and manufacturing cost, proposed in [5]. Security issues and global connecting on data processing methods are illustrated in [6]. Automatic generated protocols and utilization of artificial intelligence to develop human intervention RFID tags were presented in [7]. An optimized universal protocol based to detect RFID range frequencies with flexible sensors design specifications is introduced in [8]. The current work deals with security issues and authentication steps with password keys for both TAG and READER devices. Three stages of evaluation are proposed in this current work where each stage corresponds to user real requirements. The developed protocol verifies the client-server real protocol before revealing the product information. This authentication scheme adds more security when compared with other server-real-developed protocols. READER-TAG, TAG-SERVER, and SERVER-READER are three proposed schemes developed in this work to achieve high-security authentication and optimized secured computational network layers.

The paper structure as follows, section II discusses the encrypted protocol algorithm for the proposed scheme. Section III elaborates on FPGA dump and issues of protocol structures in real-time. Section IV presents simulation results and practical limitations of RFID interventions. Finally, Section V gives a summary of the encrypted RFID protocol algorithm.

II. Proposed Scheme and Development

The mutual authentication scheme between tag and reader for current work is shown in Fig.1. In step 1, a request will be made to TAG from READER to observe whether the TAG element acquired the EPC barcode protocol or not. If the required reply from a reader is accepted by the TAG element,

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Abstract—Radio Frequency Authentication (RFID) is used to track and identify different objects. Object identification is done by tracking tags using electromagnetic fields. Maintenance of cloud databases and preserving information of worldwide elements with unique code is a prior a challenging issue in recent days. In addition to this, Security concern is the major problem associated in due to hacking and many malpractice attacks. In this paper, a new bi-directional authentication scheme is developed to improve the security levels in object detection. The scheme utilizes XOR gates with 32-bit length encrypted keys to detect the tags. The total encrypted algorithm is developed using Verilog HDL. The designed encryption algorithm simulated in Xilinx version 14.0 and simulated using Modelsim. Further, real time implementation on FPGA is evaluated to explore the practical applications.

Index Terms—RFID, authentication, verilog, FPGA.

I. Introduction

RFID is a well know processing technique to identify a wide range of objects. Electronic Product Code (EPC) which is unique for each different object, allows the RFID to detect the object using the TAG element. EPC class 1 generation 2 (EPC1G2) is the popular authentication scheme that evolved globally to detect RFID tags [1]. Many reviews and literature has been done earlier regarding RFID technology presented in [2]. Application-oriented mobile detection using RFID bar code GPS technology is developed in [3]. EPC class 1 gen 2 disadvantages and problems lead to an enhanced version of protocol RFID protocol structure defined in [4]. The work in [4] also describes the difference between standard C1G2A and Class 1 Gen 2 protocol structure. First full compatible RFID sensors are developed in order to optimize the utilization of power and manufacturing cost, proposed in [5]. Security threats and global connecting on data processing methods are illustrated in [6]. Automatic generated protocols and utilization of artificial intelligence to develop human intervention RFID tags were presented in [7]. An optimized universal protocol used to detect RFID range frequencies with fluctuant antenna design specifications is postulated in [8]. The current work deals with security levels and authentication steps with password keys for both TAG and READER devices. Three stages of evaluation are proposed in this current work where each stage corresponds to user and requirements. The developed protocol verifies the client-server and protocol before revealing the product information. This authentication scheme adds more security when compared with other recommended developed protocols. READER-TAG, TAG-SERVER, and SERVER-READER are three proposed schemes developed in this work to achieve high-security authentication and optimized secured computational network layers.

This paper structure as follows, section II discusses the encrypted protocol algorithm for the proposed scheme. Section III elaborates on FPGA dump and issues of protocol structure in real-time. Section IV presents simulation results and practical limitations of RFID interventions. Finally, Section V gives a summary of the encrypted RFID protocol algorithm.

II. Proposed Scheme and Development

The mutual authentication scheme between tag and reader for current work is shown in Fig.1. In step 1, a request will be made to TAG from READER to observe whether the TAG element supports the EPC barcode protocol or not. If the request made from a reader is accepted by the TAG element,

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An Improved Power Efficient Clock Pulsed D FlipFlop Using Transmission Gate

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Abstract

Recent digital applications will require highly efficient and high-speed gadgets and it is related to minimum delay and power consumption. The proposed work deals with a low-power clock pulsed D flip-flop using a transmission gate. To accomplish power-efficient pulsed D Flip-Flop, clock gating is proposed. The gated clock reduces the unnecessary switching of the transistors in the circuit and thus reduces the dynamic power consumption. The clock gating approach is employed by using an AND gate to disrupt the clock signal to the circuit as per the control signal called enable. Due to this process, the clock gets turned off to reduce power consumption when there is no change in the output. The proposed transmission gate-based pulsed D flip-flop's performance with clock gating and without clock gating circuit is analyzed. The proposed D flipflop power consumption is 1.388pw less than the without clock gated flipflop. Also, we have designed a 3-bit serial in and parallel out shift register using the proposed D flipflop and analyzed the performance. Tanner EDA tool is used to simulate all the circuits with 45nm technology.

Keywords: Pulsed D flip flop, clock gating, low power, shift register ,transmission gate

I. INTRODUCTION

The main concern with VLSI circuits is achieving low power and compact battery size with a long life. Area, power, speed, and performance are all critical parameters for VLSI designers to consider while optimizing their designs [1][2][3][4]. Flip flops are the major building blocks of digital circuits and also consumes around 80% of the total power consumption in the circuits.Therefore, reducing the power consumption of flip-flops can significantly reduce the power consumption of the digital systems[1]. Any circuit's overall power consumption will include both static and dynamic power. In VLSI circuits, power gating, clock gating, architecture pipelined, and other approaches are utilized to reduce the static and dynamic power consumption. One of the most common strategies for power optimization in CMOS devices is clock gating[1].Almost 50% of the dynamic power is consumed by clock distribution network in processors and Clock gating can be used at several levels of the hierarchy in VLSI design and Almost 50% of the dynamic power is consumed by clock distribution network in any round circuits. It is feasible to turn off the clock signal that drives a large functional unit, lowering power consumption on both its internal nodes and clock line.

Pulsed Flip-Flops(P-FF): Pulsed flip flops are used in High speed circuits and takes an important role in power reduction. Short duration pulses are generated and used to trigger the Flip-Flops instead of level or edge triggering. P-FFs consists of a single latch structure and a clock pulse generator (PG). If the width of the clock pulse is sufficiently narrow, the P-FF acts like a Master-Slave Flip-Flops (MS- FF) with less timing overhead. Several pulse triggered Flip-Flops architectures are discussed in[5][6].P-FFs can be classified as implicit and explicit type based on the way of pulse

generation. In implicit style, the pulse generation part is inbuilt in the latch structure and in explicit it is external to the latch structure. In implicit Pulsed FlipFlops, the pulse generation structure can be common among neighboring flip-flops and across chip area.

Transmission gate: The parallel connection of nmos and pmos forms the transmission gate. The Transmission gate's on or off condition is controlled by the nmos and pmos gate inputs. The gate is one whose nmos transistor gate gets Clk input and pmos transistor gate gets Clkb input. And the circuit is shown in figure 1.

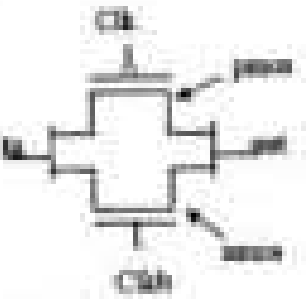

Fig.1.Transmission Gate

TGs are bilateral switches and since the input and output are interchangeable. TGs are used to form D latch and D flipflops in logic circuits. The Positive D latch using transmission gate is shown in figure 2.

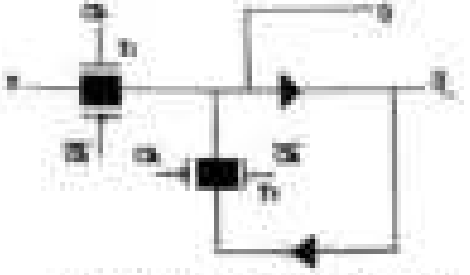

Fig.2.Transmission gate based D Latch

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DEEP LEARNING BASED PREDICTION AND MONITORING OF AIR QUALITY USING IOT

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Abstract—Air pollution is the contamination of air due to the presence of substances in the surrounding atmosphere that is dreadful to the health of all living creatures and causes irreversible damage to the climate. So, now we are going to develop an IoT Node, which is helpful to monitor several dangerous gaseous components and particulate matter pollutants like PM2.5 and PM10. This particulate matter (PM) or pollutants cause several global diseases, including Cardiovascular infections and cause many severe respiratory problems. So, we need to develop a system with IoT monitoring capability. The designed IoT node consists of Temperature, Humidity, MQ-135, MQ-7, PM2.5, and PM10 sensors. To provide an extensive central processing brain to fetch and process all these sensor values, we will use advanced ESP32 microcontroller system. Here this node is responsible for collecting the data from sensors, and it will transmits the data to the cloud, and to make our node intelligent, we will develop a Recurrent Neural Network model that comes under Deep Learning. We will create a real-time pipeline flow to feed the real-time data to our trained model. In this paper, the level of pollutants will be monitored, collected by using sensors, and this system made predictions of future pollutants level based on the past sequences that occur in the atmosphere with high accuracy by using Recurrent Neural Network models (LSTM/GRU Networks). The results of both LSTM and GRU networks are evaluated.

Keywords— Air pollution forecast, monitoring, prediction, Temperature, Humidity, PM2.5, PM10, MQ-135, MQ-7, Deep Learning, Recurrent Neural Network models, LSTM, GRU

Introduction

According to World Health Organization (WHO), 7 million people suffered major health risks due to Air Pollution. Air Pollution is recognized as one of the major disadvantages to human lives [2]. Breathing contaminated air which contains harmful air particles affects the youths, elders, and lower, middle and rich classes [7]. A person who spends 80% of the time in an indoor environment daily has a direct impact on personal health due to indoor pollutants. Air pollution indoors is one of the prominent environmental health problems [1]. The factors causing air pollution can be divided into two main categories - natural and Man-made. Natural incidents like triggering destructive effects on the environment or creating harmful substances, examples are forest conflagrations, volcanic outbursts, generating of gases such as SOx, NOx, and COx. On the other hand, man-made causes like vehicle smoke emissions, and fuel combustion, are deemed one of the leading factors of air pollution. Resultant pollutants will contain particulate matter, metal compounds, sulphur, hydrogen, nitrogen, and ozone [3].Air pollution will also expose short- and long-term diseases as well as decrease the average lifespan of an individual supposed to live. Long-term problems such as diabetes, lung cancer, heart disease, chronic respiratory diseases, lung infections, and other health problems. Short-term problems are symptoms of asthma and cause increase in various respiratory health-related hospitalizations [4].

Hence air pollution causes many hazardous effects on human lives it should be continuously monitored so that it will be controlled effectively. Air pollution can be controlled by knowing its source, origin, and its intensity. Generally, it was monitored by the respective state government's environment ministry [5]. An IoT-based Air quality detector and prediction system will be developed which helps to improve the comfort level of individual life. This system not only helps to capture the sensing data, but also monitors, analyzes, and evaluates various changes related to the atmospheric conditions.

These Air quality monitoring and prediction systems will measure the gases such as Carbon oxides Cox (CO-CO2), nitrogen oxides NOx (NO-NO2), sulphur oxides Sox (SO2, SO3, SO4), Atmospheric Particulate Matter $PM_{2.5}$ (of diameter less than or equal to 2.5 μm) and PM_{10} (of diameters less than or equal to 10 μm) and predict the future changes in the atmosphere using Deep learning algorithms. This paper described DL algorithms linked with Air quality prediction and monitoring based on urban environments and provided various methodologies given by different authors discussed by getting the overall decision for using these algorithms. The utilization of DL algorithms such as CNN, RNN Networks has actively attained vast begins which are conditioned by the essential in this field. Here Recurrent Neural Networks (RNNs) based LSTM and GRU algorithms are used for the prediction and evaluates its performance.

The organization of this paper is as follows: Section 2 describes literature survey based on AQMPS, Section 3 will give the Hardware description of AQMPS Section 4 describes AQMPS methodology and prediction using DL algorithms, Section 5 discusses the results of air quality prediction and monitoring and prediction systems and Section 6 ends with conclusions.

Literature Survey

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DEEP LEARNINGBASED PREDICTION AND MONITORING OF AIR QUALITY USING IOT

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Keywords— *Air pollution forecast, monitoring, prediction, Temperature, Humidity, PM2.5, PM10, MQ-135, MQ-7, Deep Learning, Recurrent Neural Network models, LSTM, GRU.*

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These Air quality monitoring and prediction systems will measure the gases such as Carbon oxide Cox (CO-CO2), nitrogen oxides NOx (NO-NO2), sulphur oxides Sox (SO2, SO3, SO4), Atmospheric Particulate Matter $PM_{2.5}$ (of diameter less than or equal to 2.5 μm) an PM_{10} (of diameters less than or equal to 10 μm) an predicts the future changes in the atmosphere using Deep learning algorithms. This paper described DL algorithm linked with Air quality prediction and monitoring based o urban environments and provided various methodologie given by different authors discussed by getting the overa decision for using these algorithms. The utilization of D algorithms such as CNN, RNN Networks has achieve enhanced and largest which are considered by th canonical in this field. Here Recurrent Neural Network (RNNs) based LSTM and GRU algorithms are used for th prediction and evaluate its performance.

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LITERATURE SURVEY

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HOME AUTOMATION USING CoAP PROTOCOL

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Abstract—Now a days with increasing smart devices in digital domain such as IoT based smart home automation system that aims to control all the devices of home and makes life easier and further secure. For effective control of home appliances an adaptive interface is necessary for smart homes. For this the use of Constrained Application Protocol (CoAP) for transferring data smartly in between devices that are in same network is used. The transfer of medium in CoAP is binary form among embedded devices by offering various web services is an effective way. Here the use of different sensors is done to interact with real time make data transmission and control of various applications using CoAP. The CoAP is meet the constrained devices with limited resources and a smaller header size than HTTP. In this project, home automation is done and using node mcu as embedded device connected to home devices and the complete system contains several nodes. Data from all nodes is transmitted to the gateway and is finally uploaded to the cloud via the gateway. At Gateway, the translation protocol between CoAP and HTTP is upgraded. The user can access data from the cloud using a mobile wireless and connect to the nodes.

Keywords: Home Automation, Constrained Application protocol, REST Architecture, Wi-Fi, Raspberry pi.

I. INTRODUCTION

"Constrained Application Protocol (CoAP)"[1] is an upcoming Internet application protocol for devices running on restricted networks (such as low-networks and / or low-power networks). It is very similar to the standard REST procedures. Unlike Web, that uses the same standard HTTP protocol, a single protocol is cannot rely on a IoT for all its needs. For this numerous routing protocols are used for various IoT needs. Several protocols, like MQTT and CoAP, are created to deal with applications that need data collection (for example, sensor updates) on a virtual network. Alternative designs for dealing with online programmers via an Internet connection, including the HTTP protocol and CoAP, are available. [1]. The IETF CoRE (Constrained RESTful Environments) Working Group's CoAP is a simple M2M protocol, supports independent publishing and subscription properties for both servers and view (request and response) attributes. [2] improved HTTP and RESTful Web interaction with the use of straightforward subdomains. CoAP uses the Universal Resource Identifier (URI) rather than sites, in contrast MQTT [3].In accordance with the URI's specifications, publisher publishes the data in the URI, and the subscriber avails themselves of the service. A notification of the re value as proposed by the URI will be sent to all subscriber if saved data is published in the URI. CoAP is a bit programme that typically requires a fixed 4-bread bar and a tiny payload message with a variable payload based on the web server or utilising technology. Thread offline datagram connections between clients and ser are less dependable.

Since CoAP includes content negotiation to convey device's preferred representation, it offers greater capabi than MQTT. This enables the client and server to ex independently and edit new presentations will interworking. Both CoAP and MQTT can be utilized wit bit controllers and 10th of memory bytes and are ideal for low bandwidth and wsn equipped devices. According numerous research, CoAP consumes less and recon under comparable circumstances [3].

CoAP runs IPsec (Internet Protocol Security) for way authentication, integrity, and encryption, along DTLS (Datagram Transport Layer Security), of t legacy principles. With one set of highly effective Int Protocol (IP) device communication protocols, in term small package sizes, high delays, high packet loss ratios potentially small bandwidth, of CoAP + groups the needs of the seller [4].

II. RELATED WORK

Millions of nods are expected to be employe various product areas in the near future as a result o mission of the CoAP requirements. Intelligen intelligent electricity, intelligent lighting, industrial co systems, asset tracking, and environmental monitoring just a few of these applications. The preferred protocol restricting IoT applications and enabling device-to-d communication is CoAP.

In this, we will look at the various modes in w CoAP is implemented and implemented. In the study I Naik[1], the emergence of four popular comm processes namely MQTT, CoAP, HTTP and AMQP

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HOME AUTOMATION USING CoAP PROTOCOL

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Since CoAP includes content negotiation to convey the device's preferred representation, it offers greater capability than MQTT. This enables the client and server to switch independently and still save processing without interacting. Both CoAP and MQTT can be utilized with 8 bit controllers and 10Ks of memory bytes and are suitable for low bandwidth and well-equipped devices. According to numerous research, CoAP conserves time and resources under comparable circumstances [1].

CoAP uses IPsec (Internet Protocol Security) for two-way authentication, integrity, and encryption, along with DTLS (Datagram Transport Layer Security), all data legacy principles. With one set of highly effective Internet Protocol (IP) device communication protocols, in terms a small package sizes, high delays, high packet loss ratios are potentially small bandwidth. of CoAP is except for the needs of the seller [4].

II. RELATED WORK

Millions of nods are expected to be employed a various product areas in the near future as a result of the existence of the CoAP requirement. Intelligent grid intelligent electricity, intelligent lighting, industrial control systems, asset tracking, and environmental monitoring are just a few of these applications. The preferred protocol for supporting IoT applications and making device-to-device communication is CoAP.

In this, we will look at the various studies in which CoAP is implemented and implemented. In the study by N Pinki[1], the emergence of four popular messaging protocols namely MQTT, CoAP, HTTP and AMQP was

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Underwater Image Enhancement using MIRNet

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Abstract – In recent years, enhancement of underwater images is a challenging task which is gaining priority since human eye cannot perceive images under water. The significant details underwater are not clearly captured using the conventional image acquisition techniques, and also they are expensive. Hence, the quality of the image processing algorithms can be enhanced in the absence of costly and reliable acquisition techniques. Traditional algorithms have certain limitations in the case of those images with varying degrees of fuzziness and color deviation. In our proposed model, we used deep learning model for underwater image enhancement. First, the original image is pre-processed by the white balance algorithm for colour correction and the contrast of the image is improved using contrast enhancement technique. Next, the pre-processed image is given to the MIRNet for enhancement. MIRNet is a deep learning framework which can be used to enhance the low light level images. The enhanced image quality is measured using peak signal-to-noise ratio (PSNR), root mean square error (RMSE), and structural similarity index (SSIM) parameters.

Index Terms – Underwater, Deep learning, MIRNet, peak signal-to-noise ratio, structural similarity index.

I. INTRODUCTION

Image processing can be used to perform some operations on an image to extract some useful information from it. It is one branch of signal processing where the input is a 2-D signal (image) and output may be image or an attributes associated with it. Now a day, image processing is growing rapidly in the core research area within engineering, medicine and other disciplines too [1].

In image processing, underwater image enhancement plays a crucial role and vision applications over the past few years. The images taken underwater are affected by various lighting and environmental conditions, hence the quality of the image is degraded. The underwater image suffers with degradation due to scattering and absorption. The scattering and absorption process of light in water which influences the overall performance of the systems under water [2]. Forward scattering leads to blurring of the image features, and backward scattering limits the contrast of the image. Similar is the color fading issue, whereby colors like red and yellow almost disappear with increasing depths, which is the reason for dominations of either the blue or the green color. The underwater images are specified by their poor visibility since light is exponentially attenuated as it travels in water and the scenes result poorly contrasted and fuzzy as shown in Fig. 1. Hence, it is necessary to enhance the underwater images for human, it is necessary to enhance the underwater images for human eye quality and to prepare the image for further analyzing its quality and to prepare the image for further processing [3].

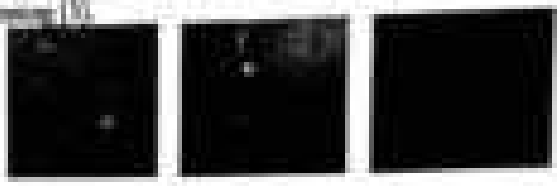

Fig 1 Sample underwater images

The rest of the paper is organized as follows: Section II reviews the literature of the image processing under water. Section III presents a new method for enhancing the quality of underwater image. Section IV discusses the simulation results obtained by using our model and comprehensive analysis of the model by evaluating various metrics. Finally, section V describes the conclusion of the work.

II. LITERATURE SURVEY

Schettini et al. [4] reviews the enhancement and restoration methods for the underwater image processing. They discussed about the light propagation in water, image color correction, lightning problems, and various quality assessment models.

Boudhane et al. [5] proposed a method for pre-processing and fish localization in underwater images by using mean-shift algorithm for image segmentation and Poisson-Gauss mixture algorithm for noise reduction, and tested their model under different underwater conditions.

Ancuti et al. [6] performed fusion of two images (color compensated and white balance version) and then transforms the edges and color contrast to the output images.

Dhawy et al. [7] performed underwater image enhancement by changing the color content in the image from RGB to YCbCr space. They used Rayleigh distribution along with integrated color model and calculated no-reference-image quality metrics.

Li et al. [8] created underwater image enhancement benchmark with 890 raw images, 890 reference images, and 60 challenging images. They also provided an underwater image enhancement network named WaterNet and made the dataset publicly.

Han et al. [9] proposed a convolution neural network (CNN) based method by combining max-RGB method and shades-of-gray method for detecting the underwater objects.

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Underwater Image Enhancement using MIRNet

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Abstract – In recent years, enhancement of underwater images is a challenging task which is gaining priority since human eye cannot perceive images under water. The significant details underwater are not clearly captured using the conventional image acquisition techniques and also they are expensive. Hence, the quality of the image processing algorithms can be enhanced in the absence of costly and reliable acquisition techniques. Traditional algorithms have certain limitations in the case of these images with varying degrees of fuzziness and color deviations. In our proposed model, we used deep learning model for underwater image enhancement. First, the original image is pre-processed by the white balance algorithm for color correction and the contrast of the image is improved using contrast enhancement technique. Next, the pre-processed image is given to the MIRNet for enhancement. MIRNet is a deep learning framework which can be used to enhance the low light level images. The enhanced image quality is measured using peak signal-to-noise ratio (PSNR), root mean square error (RMSE), and structural similarity index (SSIM) parameters.

Index Terms – Underwater, Deep learning, MIRNet, peak signal-to-noise ratio, structural similarity index.

I. INTRODUCTION

Image processing can be used to perform some operations on an image to extract some useful information from it. It is one branch of signal processing where the input is a 2-D signal (image) and output may be image or an attributes associated with it. Now a day, image processing is growing rapidly in the core research area within engineering, medicine and other disciplines too [1].

In image processing, underwater image enhancement plays a crucial role and vision applications over the past few years. The images taken underwater are affected by various lighting and environmental conditions, hence the quality of the image is degraded. The underwater image suffers with degradation due to scattering and absorption. The scattering and absorption process of light in water which influences the overall performance of the systems under water [2]. Forward scattering leads to blurring of the image features, and backward scattering limits the contrast of the image. Similar to the color fading issue, whereby colors like red and yellow almost disappear with increasing depths, which is the reason for dominance of either the blue or the green color. The underwater images are specified by their poor visibility since light is exponentially attenuated as it travels in water and the water media is poorly understood and hazy as shown in Fig. 1. Hence, it is necessary to enhance the underwater images for analyzing its quality, and to prepare the image for further processing [3].

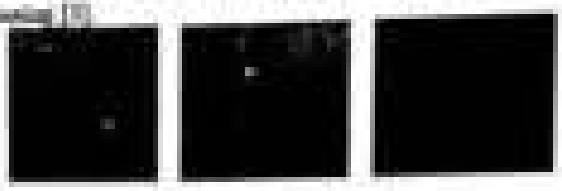

Fig.1 Sample underwater images

The rest of the paper is organized as follows: Section II reviews the literature of the image processing under water. Section III presents a new method for enhancing the quality of underwater image. Section IV discusses the simulation results obtained by using our model and comprehensive analysis of the model by evaluating various metrics. Finally section V describes the conclusion of the work.

II. LITERATURE SURVEY

Saleem et al. [4] reviews the enhancement and restoration methods for the underwater image processing. They discussed about the light propagation in water, image color correction, lightening problems, and various quality assessment models.

Sreedhar et al. [5] proposed a method for pre processing and fish localization in underwater images by using mean-shift algorithm for image segmentation on Poisson-Gauss mixture algorithm for noise reduction, and tested their model under different underwater conditions.

Ancuti et al. [6] performed fusion of two images (color compensated and white balance version) and then transforms the edges and color contrast to the output images.

Dawey et al. [7] performed underwater image enhancement by changing the color content in the image from RGB to YCbCr space. They used Rayleigh distribution along with integrated color model and calculated to enhance image quality metrics.

Li et al. [8] created underwater image enhancement benchmark with 950 raw images, 890 reference images, as 60 challenging images. They also provided an underwater image enhancement network named Water-Net and made it dataset publicly.

Han et al. [9] proposed a convolution neural netwo (CNN) based method by combining max-RGB method a shades of grey method for detecting the underwater objects.

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Underwater Image Enhancement using MIRNet

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Abstract – In recent years, enhancement of underwater images is a challenging task which is gaining priority since human eye cannot perceive images under water. The significant details underwater are not clearly captured using the conventional image acquisition techniques and also they are expensive. Hence, the quality of the image processing algorithms can be enhanced in the absence of costly and reliable acquisition techniques. Traditional algorithms have certain limitations in the case of these images with varying degrees of fuzziness and color deviation. In our proposed model, we used deep learning model for underwater image enhancement. First, the original image is pre-processed by the white balance algorithm for colour correction and the contrast of the image is improved using contrast enhancement technique. Next, the pre-processed image is given to the MIRNet for enhancement. MIRNet is a deep learning framework which can be used to enhance the low light level images. The enhanced image quality is measured using peak signal-to-noise ratio (PSNR), root mean square error (RMSE), and structural similarity index (SSIM) parameters.

Index Terms – Underwater, Deep learning, MIRNet, peak signal-to-noise ratio, structural similarity index.

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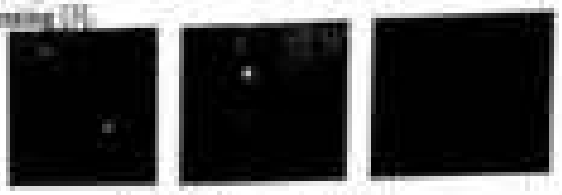

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Z-Based Home Automation System Using IoT

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Keywords: Node MCU, Arduino Uno, Z-Wave, Blynk app,NRF905,IoT

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Forexample,maintain your room temperature according to the surrounding temperature by the time you returned to the home. And gives the alerts about your water tank level, reminds you about the things(vegetables,milk etc) present in smart refrigerator. It also provides efficient power management for the home appliance by controlling their power consumption.

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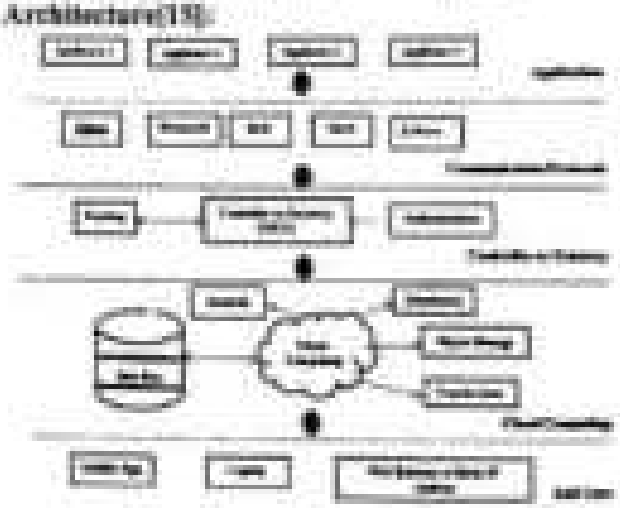

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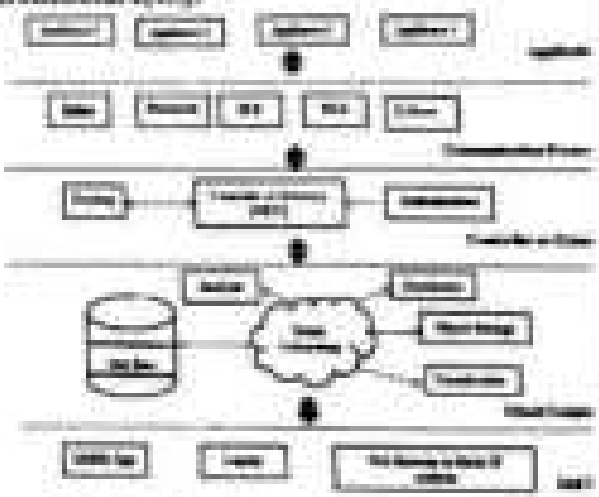

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Z-Based Home Automation System Using IoT

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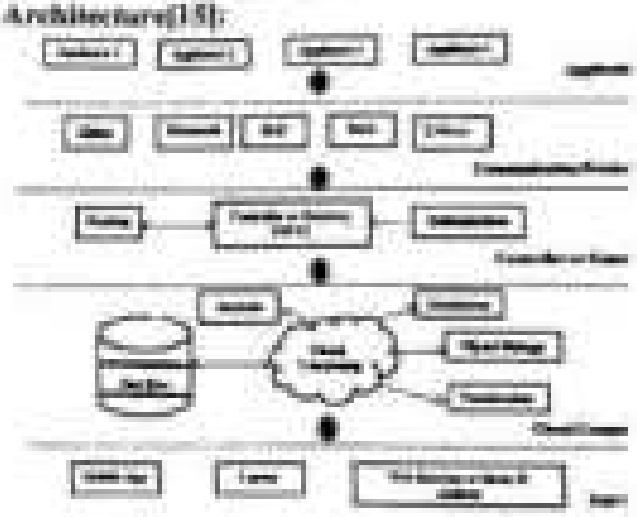

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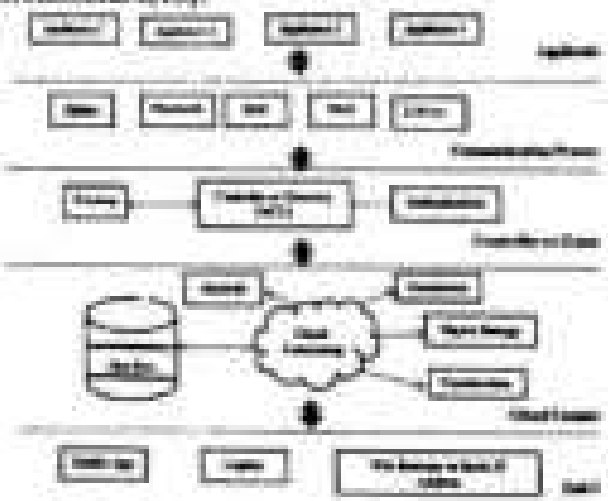

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DESIGN OF ANNULAR RING BASED 3D HEXAGONAL MIMO ANTENNA WITH IMPROVED ISOLATION TECHNIQUES

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Abstract—The use of ultra-wideband (UWB) waveguide antennas can address the issue of limited bandwidth and poor gain present in conventional microstrip antennas. The primary issue with wireless communication is multipath fading, which results from electromagnetic signals being reflected, diffracted, and scattered. Diversity approaches can be used to address the multipath interference issue. Diversity strategies greatly increase the system's transmission capacity without increasing the system's transmitted power or bandwidth. When compared to single antenna systems, the notion of spatial diversity or multiple-input multiple-output (MIMO) is highly helpful in reducing the impacts of multipath fading and ensuring high data rates, range, and dependability. Additionally, MIMO systems that include UWB technology effectively handle the short range and constrained channel capacity issues with LR-WPAN wireless local area network (WLAN) band enrichment ultra-wideband (UWB) multiple-input multiple-output (MIMO) diversity antenna that is supplied by a one-piece coplanar waveguide (CPW) is proposed. To achieve spatial variety, the antenna components will be positioned in a cuboidal manner all around the polystyrene foam. A reflector will also be positioned between the two sides of the cuboidal antenna to improve isolation between adjacent antenna elements. Another method for enhancing isolation is Defected Ground Structure (DGS).

INTRODUCTION

MIMO communication, an abbreviation for Multiple-In, Multiple-Out, distributes the same data as multiple signals concurrently across multiple antennas while still using a single radio channel. An RF link's signal quality and strength are increased using various antennas in this instance of antenna diversity. At the transmission point, the data is divided into several data streams that are then recombined by a second MIMO radio set up with the same number of antennas on the receiving side. The receiver is built to accommodate for any additional noise or interference, lost signals, and even the little lag in timing between each signal's receipt.The MIMO radios add redundancy to data transmission that traditional single antenna setups (SISO: Single In, Single Out) cannot by delivering the same data on several streams. Due to this, MIMO systems provide a number of benefits over standard SISO arrangements.

In every day lives, wireless communication has grown in importance. We now rely heavily on our pagers, cell phones, satellite dishes, radios, and other devices. An antenna is a component that all of these wireless systems share, whether they transmit or receive. The antenna is in charge of connecting the RF energy from the guided transmission line (link) to free space and back. Antennas are employed in a variety of technologies, including radar, wireless LAN, point-to-point radio transmission, radio and television broadcasting, and space exploration.

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Abstract—The use of ultra-wideband (UWB) monopole antennas can address the issue of limited bandwidth and poor gain present in conventional microstrip antennas. The primary issue with wireless communication is multipath fading, which results from electromagnetic signals being reflected, diffracted, and scattered. Diversity approaches can be used to address the multipath interference issue. Diversity strategies greatly increase the system's transmission capacity without increasing the system's transmitted power or bandwidth. When compared to single antenna systems, the notion of spatial diversity or multiple-input multiple-output (MIMO) is highly helpful in reducing the impacts of multipath fading and obtaining high data rates, range, and dependability. Additionally, MIMO systems that include UWB technology effectively handle the short range and constrained channel capacity issues with UWB.A wireless local area network (WLAN) band notched ultra-wideband (UWB) multiple-input multiple-output (MIMO)/diversity antenna that is supplied by a non-planar coplanar waveguide (CPW) is proposed. To achieve spatial variety, the antenna components will be positioned in a cuboidal manner all around the polystyrene foam. A reflector will also be positioned between the two sides of the cuboidal antenna to improve isolation between adjacent antenna elements. Another method for enhancing isolation is Defected Ground Structure (DGS).

INTRODUCTION

MIMO communication, an abbreviation for Multiple-In, Multiple-Out, distributes the same data as multiple signals concurrently across multiple antennas while still using a single radio channel. An RF link's signal quality and strength are increased using various antennas in this instance of antenna diversity. At the transmission point, the data is divided into several data streams that are then recombined by a second MIMO radio set up with the same number of antennas on the receiving side. The receiver is built to accommodate for any additional noise or interference, lost signals, and even the little lag in timing between each signal's receipt.The MIMO radios add redundancy to data transmission that traditional single antenna setups (SISO: Single In, Single Out) cannot by delivering the same data on several streams. Due to this, MIMO systems provide a number of benefits over standard SISO arrangements.

In everyday lives, wireless communication has grown in importance. We now rely heavily on our pagers, cell phones, satellite dishes, radios, and other devices. An antenna is a component that all of these wireless systems share, whether they transmit or receive. The antenna is in charge of converting the RF energy from the guided transmission line and on free space and back. Antennas are employed in a variety of technologies, including radar, wireless LAN, point-to-point radio transmission, radio and television broadcasting, and space exploration.

MIMO ANTENNAS

MIMO communication, an abbreviation for Multiple-In, Multiple-Out, distributes the same data as multiple signals concurrently across multiple antennas while still using a single radio channel. An RF link's signal quality and strength are increased using various antennas in this instance of antenna diversity. At the transmission point, the data is divided into several data streams that are then recombined by a second MIMO radio set up with the same number of antennas on the receiving side. The receiver is built to accommodate for any additional noise or interference, lost signals, and even the little lag in timing between each signal's receipt.The MIMO radios add redundancy to data transmission that traditional single antenna setups (SISO: Single In, Single Out) cannot by deliver.e.g the same data on several streams. Due to this, MIMO systems provide a number of benefits over standard SISO arrangements.

1. MIMO radios may use bounced and reflected RF broadcasts (known as multipath propagation) to boost signal strength even when

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Underwater Image Enhancement using CNN and Image Formation Model

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Abstract—For marine navigation, marine geological exploration, tracking of underwater objects, ecological research, and other reasons, high-quality underwater images are essential. In this research, a new underwater image enhancement method utilizing CNN and an image formation model are proposed. The outcome of our study demonstrates the benefits of doing so, including the advantages of correcting color, enhancing results, and achieving higher PIQUE ratings. Direct transmission and backscatter estimation are the two modules we employed. Using a proposed CNN design, these two modules are developed.

Keywords—underwater images, image enhancement, CNN, image formation model.

I. INTRODUCTION

Light propagation in water medium must also be taken into account when dealing with underwater image enhancement. In scientific endeavours like the observation of marine life and biological ecosystems, the quality of the underwater images is crucial. Color changes occurs due to light absorption for different wavelengths. The underwater images are blurish or greenish in color and are having low contrast and brightness.

The physical image formation model for underwater and fogged images is very similar [1]. In traditional techniques, underwater image color correction is done by applying the physical image formation model of fogged images to underwater images. But unlike in the atmosphere, light does not travel as quickly in water. Research on underwater image enhancing techniques is crucial, for this reason.

Section II of the paper describes the literature survey and in section III the proposed work is explained, section IV explains the results with evaluation measurements and section V concludes the paper.

II. EXISTING WORK

The transmission of light is affected by the air or water particles scattering, which causes the light entering the camera to be different from the light reflected from the object itself, thus degrading the captured images. Through the direct application of the physical image generation model of fogged images to underwater images, researchers have presented a number of methods [2–3] for underwater image colour correction. However, compared to the atmosphere, water has a distinct medium for the propagation of light. The differences between the scattering effects of light with different wavelengths are not taken into account by the current models of image formation. The physical image formation concept of underwater images has been further examined in the most recent publication by Akkaynak et al. [4] Through a large number of real underwater experiments, the coefficient for attenuation for the existing model was modified, and a modified underwater image formation model was suggested. Deep learning has recently produced excellent outcomes on computer vision tasks like picture identification, image segmentation, and object detection. More and more researchers begin to apply deep learning to underwater image enhancement tasks. Li et al. [5]proposed an underwater image color correction method based on CycleGAN. Skinner et al. [6] proposed a two stage convnet network structure for image depth estimation and color correction respectively, and Fu et al. [7]proposed a convnet network combining global and local information for underwater image enhancement. The above methods based on physical imaging models are often only applicable to specific images and are not generalized, and most of the existing methods are based on approximate image formation models. Some of the deep learning-based methods ignore the image formation model, which leads to a complex model structure and makes training process more difficult. Some other deep learning-based methods incorporate the image formation model but simplify it, which can lead to insignificant image enhancement effects.

III. PROPOSED WORK

A new technique for underwater image enhancement is suggested in this paper by improving the existing deep learning-based image enhancement method by combining the recently proposed revised image formation model [4]. The proposed work have a backscatter estimation module and a direct-transmission estimation module, both of which are implemented using convolution neural networks. The two modules together with their outputs and the input image are fed into a reconstruction module to get the enhanced underwater image. Experiments on UIEB dataset validate the accuracy of the suggested method.

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FBMC Signal Detection Using Autocorrelation

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Abstract— In cognitive radio, spectrum sensing plays an important role. In this paper, a basics detector for filter bank multi carrier (FBMC) signals was used as these samples are uncorrelated. If the FBMC signal is processed using our suggested method, the autocorrelation function of the FBMC signal becomes non-zero at the delay equal to the number of subcarriers. Yet, the additive white Gaussian noise samples remain uncorrelated with the same suggested procedure. This feature is used to detect FBMC signal in noise using an autocorrelation-based feature detector. The key benefit of the suggested detector is that, in contrast to blind detectors, it can tell the difference between the FBMC signal and the noise. The Neyman-Pearson detector's threshold can be altered to maintain a consistent false alarm rate while optimizing detection chances when the performance of the proposed detector's use statistic is determined in a noisy environment. The suggested detector's efficiency is demonstrated by simulation results. All have determined with the help of MATLAB software.

Index Terms—FBMC, auto correlation, PU, Cognitive Radio.

I. INTRODUCTION

The filter bank multicarrier (FBMC) is a potential replacement for OFDM for 5G and cognitive radios. The use of a carefully thought-out bank of filters with little out-of-band radiation and no CP leads to a notable increase in spectral efficiency [1]. One of the most critical jobs in cognitive radios is spectrum sensing. The key challenge with traditional cognitive radio standards has been detecting the presence of a primary (licensed or heritage) user using incumbent protection database and spectrum sensing techniques. Sensing and differentiating FBMC signals is a critical topic because FBMC is one of the five most promising candidates for 5G waveforms. As a result, the primary goal of this study is to propose a spectrum sensing strategy for FBMC signals.

The bulk of spectrum sensing detection algorithms have been developed for OFDM transmission [2] hypothesized diverse coexistence and a taxonomy of TVWS-targeting mechanisms. OFDM is an excellent choice for point-to-point communication since it is simple to implement and delivers very high bandwidth. However, it has various obstacles, including low spectral efficiency and high out-of-band emissions. To address these issues, numerous modulation approaches are being developed, one of which is Filter Bank Multi Carrier (FBMC). Because there are fewer side lobes in the FBMC approach, there are less out-of-band emissions [3] concentrated on the algorithms for local and cooperative spectrum sensing. The detection of main user (PU) broadcasts based on orthogonal frequency division multiplexing (OFDM) using local sensing techniques is described. The described autocorrelation detectors are easy to use and have good computational performance. The algorithms are further developed for the cooperative sensing situation, where multiple secondary users (SUs) collaborate to find a PU broadcast [3].

"Recent discussions of 5G technology have raised the need for waveforms with higher spectral confinement, yet whenever than the celebrated orthogonal frequency division multiplexing (OFDM). This desire can be satisfied by the alternative technique known as filter bank multicarrier (FBMC). Subcarrier waveforms are built based on a prototype filter designed with this emphasis in mind. The research conducted in the University of Utah's wireless laboratory over the previous 15 years is reviewed in-depth in this paper. It also establishes a connection between this research and previous studies. It is addressed the theoretical foundation upon which FBMC waveforms are built. Moreover, alternative approaches to creating efficient prototype filters are given. For completeness, poly phase structures, which are utilized to create FBMC systems in a computationally efficient manner, are introduced. Their complexity is compared to that of OFDM. In particular, the issues with channel equalization,

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FBMC Signal Detection Using Autocorrelation

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Index Terms—FBMC, auto correlation, PU, Cognitive Radio.

I. INTRODUCTION

The filter bank multicarrier (FBMC) is a potential replacement for OFDM for 5G and cognitive radios. The use of a carefully designed bank of filters with little out-of-band radiation and no CP leads to a notable increase in spectral efficiency [1]. One of the most critical jobs in cognitive radios is spectrum sensing. The key challenge with traditional cognitive radio standards has been detecting the presence of a primary (licensed or heritage) user using incumbent geolocation databases and spectrum sensing techniques. Sensing and differentiating FBMC signals is a critical topic because FBMC is one of the few most promising candidates for 5G waveforms. As a result, the primary goal of this study is to propose a spectrum sensing strategy for FBMC signals.

The bulk of spectrum sensing detection algorithms have been developed for OFDM transmission [2], hypothesized diverse correlations and a taxonomy of TVWS-targeting mechanisms. OFDM is an excellent choice for point-to-point communication since it is simple to implement and delivers very high bandwidth. However, it has various obstacles, including low spectral efficiency and high out-of-band emissions. To address these issues, numerous modulation approaches are being developed, one of which is Filter Bank Multi Carrier (FBMC). Because there are fewer side lobes in the FBMC approach, there are less out-of-band emissions [3] concentrated on the algorithms for local and cooperative spectrum sensing. The detection of users (PU) broadcasts based on orthogonal frequency division multiplexing (OFDM) using local sensing techniques is described. The examined autocorrelation detectors are easy to use and have good computational performance. The algorithms are further developed for the cooperative sensing situation, where multiple secondary users (SUs) collaborate to find a PU broadcast [3].

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FBMC Signal Detection Using Autocorrelation

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Index Terms—FBMC, auto correlation, PU, Cognitive Radio.

I. INTRODUCTION

The filter bank multicarrier (FBMC) is a potential replacement for OFDM for 5G and cognitive radios. The use of a carefully straight-cut bank of filters with little out-of-band radiation and no CP leads to a notable increase in spectral efficiency [1]. One of the most critical jobs in cognitive radios is spectrum sensing. The key challenge with traditional cognitive radio standards has been detecting the presence of a primary (licensed or heritage) user using incumbent geolocation databases and spectrum sensing techniques. Sensing and differentiating FBMC signals is a critical topic because FBMC is one of the few most promising candidates for 5G waveforms. As a result, the primary goal of this study is to propose a spectrum sensing strategy for FBMC signals.

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Survey on FPGA-Based Deep Learning Network Accelerators for Learning and Classification

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ABSTRACT Deep learning is a branch of artificial intelligence that has evolved as a result of recent developments in digital technology and the accessibility of reliable data. Deep learning has proven to be capable of tackling complicated learning problems that were previously unattainable. Applications for image recognition and detection have shown the value of convolutional neural networks (CNNs), in particular. However, because they demand high CPU operations and memory bandwidth, conventional CPUs are unable to reach the needed performance levels. The throughput of CNNs has therefore been increased by using hardware accelerators that make use of application-specific integrated circuits(ASIC), field-programmable gate arrays (FPGAs), and graphics processing units(GPU). More specifically, FPGAs' ability to maximize parallelism and energy efficiency have lately been employed to speed up the implementation of deep learning networks. The FPGA-based Accelerator design and associated performance optimizations are surveyed in this paper.

INDEX TERMS Deep Learning, DNN, Field Programmable Gate Arrays (FPGAs), hardware accelerator, parallel computer architecture, reconfigurable computing.

I. INTRODUCTION

The basis for many recent applications of artificial intelligence (AI) is deep neural networks (DNNs). The number of applications that use DNNs has multiplied since its ground-breaking usage in speech and image recognition. These DNNs are used in a wide range of applications, including playing sophisticated games, self-driving automobiles, and cancer detection. DNNs can now outperform humans in several of these fields in terms of accuracy[1][2]. After utilizing statistical learning over a vast quantity of data to generate an effective representation of an input space, DNNs' higher performance is due to their capacity to extract high-level features from raw sensory data. In contrast to earlier methods, this one makes use of expertly hand-crafted features or regulations. But DNNs' increased accuracy comes at the expense of their considerable computational complexity. Although many DNN processes have relied heavily on general-purpose compute engines, particularly graphics processing units (GPUs), there is growing interest in offering more specialized acceleration of the DNN computation. By lowering the computing cost of DNNs either completely through improvements in hardware design or jointly through hardware design and DNN methodology. A key aspect of DL is that the networks and/or their weights were not constructed by humans. The deep learning's exceptional capacity for spotting complex structure s in high-dimensional data. Character recognition [3], gesture recognition [4], speech recognition [5][6][7][8], document processing [7][8], natural language processing [9], [10], and video classification are some of the applications DL in science and business fields.

In addition to being researched in deep learning hardware design research, the lowest accuracy has also been applied to more recent commercial platforms for DNN processing. One such example is Google's Tensor Processing Unit (TPU), which was created for 8-bit integer arithmetic and announced in May 2016. Similar to this, the April 2016-announced PASCAL GPU from Nvidia offers 8-bit integer instructions for deep learning inference. The fundamental advantage of employing 8-bit computing on general-purpose platforms like CPUs and GPUs is an increase in throughput since four 8-bit operations can be completed rather than one 32-bit operation within a given clock cycle.

1.1 NEED FOR DEEP LEARNING NETWORKS TO BE HARDWARE ACCELERATED

In order to give more accurate results and real-time object identification, for example in applications like robotics and self-driving automobiles[11], the convolution neural network's size must be increased by the addition of more neural network layers. However, when more and different kinds of NN layers develop, more complicated CNN structures and high-depth CNN models result. As a result, training and evaluating the resulting large scale CNN requires billions of operations, millions of parameters, and a lot of computational power [12], [13], [14]. A computational problem for general-purpose processors is posed by such requirements (GPP). Hardware accelerators have thus been employed to increase the throughput of CNN, including graphic processing units (GPU), application specific integrated circuits (ASIC), and field programmable gate arrays (FPGA).

Design and Development of an Integrated Solar PV Based Water Purification and IoT Based Water Quality Monitoring System

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ABSTRACT: Water is the vital natural resource and essential element in our lives. Safe and easily accessible water is critical for public health. Improved water supply and sanitation, as well as better water resource management, can boost a country's economic growth and contribute significantly to poverty reduction. However, global water pollution is on the rise. Consequently, a method has been developed to continuously test the quality of water.In this project, we built a solar-powered water purifier. The fundamental guiding principle behind this project is renewable resources. The project makes use of solar energy for water purification and plant activities. The photovoltaic solar system is connected to the power grid. Solar panels, converters, and grid-connected equipment comprise a grid-connected photovoltaic system. The power for the purification unit and the entire plant is supplied by the Grid. The water quality monitoring (WQM) also has to be done effectively this can be done by using an advancing technology like Internet of Things (IoT). Water quality can be monitored using Total Dissolved Solids (TDS), Potential of Hydrogen (pH), Turbidity, and Dissolved Oxygen (DO) sensors. The raspberry pi receives the sensor output values as input. Following data, the obtained values are shown in a serial monitor attached to the Raspberry Pi.These values are then distinguished from the WHO (World Health Organization) standard values. Finally, all sensor data can be uploaded to the cloud and visualized.

KEYWORDS: Turbidity, TDS, pH, Dissolved Oxygen, Reverse Osmosis, Photovoltaic system, IoT(Internet of things), Raspberry pi ,Cloud.

INTRODUCTION

Drinking water facilities are severely lacking for the growing population. The increased use of chemicals in water purification, the use of pesticides and fertilizers in fields, and the discharge of polluted water and industrial wastes into water bodies all contributed to a reduction in water quality globally. It is a major concern as it affects the health of individuals adversely. The prevalence of several waterborne illnesses has increased, which has raised the death rate.

The use of particular sensors to determine water quality characteristics such conductivity and dissolved oxygen (DO), turbidity, pH, and temperature is covered in this study.The sensor data were measured and computed using the microcontrollers. The raspberry pi, the central controller that makes use of the ZigBee protocol, received the processed remote values after that.Finally, all of the sensor data is accessible via cloud computing via any browser [1].

The water quality monitoring system using IoT is done with the help of Wemos.D1 mini and sensors (pH, turbidity, temperature and ultrasonic). Wemos D1 mini is an Arduino like board with inbuilt Wi-Fi capabilities to send sensors data over the internet. The overall experimental setup was developed and tested. Simplicity of water data acquisition, online data transfer, monitoring, recording and analysis. It is experimentally observed that system takes less than a minute to update its values [2].

Real time monitoring of the water quality is done by the water quality measuring system using a variety of sensors, including pH, conductivity, temperature, turbidity.The Wi-fi module in the system transfers data collected by the sensors to the microcontroller, and transfers the data to the smart phone/PC. This system can keep a strict check on the pollution of the water resources and be able to provide an environment for safe drinking of water [3].

To track water quality characteristics, water parameters including pH, turbidity, temperature, dissolved oxygen, and salinity must be measured. We created a low-cost, long-term IoT-based water quality measurement system for precise water quality monitoring. In this paper, we proposed a smart sensor interface device that can sense water quality parameters and generate data in an online system for displaying real-time water quality parameter measurements. It incorporates various types of sensors for measuring drinking water quality. These sensors are associated with Arduino. We create a serial communication between Arduino and Node MCU to transmit the values, which will display the data on an online system (web interface).Every water source will have a QR code attached to it to make it simple for any user to access. To find out if the water is safe to drink, they can scan the QR code. Using

Three-phase induction motor Protection by relay against various abnormal conditions and monitoring using GSM

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Abstract -

This endeavour would aid India's cultural development. Due to frequent power outages and alternate voltage conditions in India, it is critical to deliver water efficiently to the fields during normal conditions. This is accomplished by sending messages between the user's phone and GSM. This system was created using a Microcontroller that is linked to the GSM and the induction motor. The microprocessor protects against overcurrent, dry run, and single phasing. It is envisaged that this application will supply cow across the motor to a large extent. Here provide an extra feature of ON/OFF motor operation via GSM. The voltage and current values of the motor, as well as any system faults are tracked, and warning messages are displayed on the LED. If an error occurs, the contactor will trip.

Key words : Relay, GSM ,LED,OVER CURRENT

INTRODUCTION

Many industrial processes use AC induction motors (IMs) as actuators. Even though IMs are dependable, certain unfavorable stresses are placed on them, which leads to defects. A rapidly developing method for the early failure detection is monitoring of an IM. It prevents an industrial process from failing without warning. There are two types of monitoring methods: traditional and digital. Traditional three-phase IM monitoring approaches are often provided by a mix of mechanical and electrical monitoring equipment. Electrical defects, such as failed motor insulation, cannot be detected by mechanical motor sensing methods.

A fault in an electric power system is an irregular flow of electricity. One fault when current flow exceeds the normal load is a short circuit, for instance. A defect in a three-phase system can affect one or more phases as well as the ground, or it can simply happen between the phases. Current enters the earth when there is a "ground fault" or "earth fault." For power systems, it is possible to compute the potential short circuit current of a defect. To minimize the loss of service caused by a failure, protective devices in power systems monitor fault conditions and activate circuit breakers and other devices. An asynchronous or induction motor is an AC electric motor in which the electric current required to produce torque in the rotor is obtained by the magnetic field of the stator winding. Induces electromagnetic induction. For all or some of the energy transported from stator to rotor, an induction motor does not require mechanical commutation, separate excitation, or self-excitation, unlike a universal, DC, or big synchronous motor. The induction motor can be either submersible or mono block. Due to their durability, dependability, and affordability, three-phase squirrel-cage induction motors are frequently employed in industrial drives. For lower loads like home appliances like fans, single-phase induction motors are frequently employed. As a result, diagnosing issues with induction motors is crucial. Generally speaking, rotor and stator defects are two different types of induction motor failures. Such problems can have internal or external causes related to various electrical, environmental, or mechanical factors.

OBJECTIVES

Numerous studies have revealed that up to 90% of faults on the majority of overhead lines are temporary. When one or more circuit breakers trip immediately to isolate a fault, such as an insulator flashover, the fault is declared to be transitory and does not return once the line is reenergized. At lower distribution voltages, faults are typically less transient (around the 80% range), while at higher sub-transmission and transmission voltages, faults are typically more transient (near the 90% range). In this project, flaws are found, and after they are fixed, the motor automatically runs depending on whether they are temporary or permanent defects. One microcontroller is employed to identify issues such short circuits and overloads voltages. voltage, shut off the motor, and show the message on the LED display. In the event of a short circuit, relays are utilized to operate the supply switches off the load.

These are the study's stated goals

- Over current Protection Phase failure detection.
- A decrease in the time spent fault finding.
- If a short circuit exists, the LED will indicate it.
- During the motor's auto reset, maintain the

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Three-phase induction motor Protection by relay against various abnormal conditions and monitoring using GSM

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Abstract -

This endeavour could aid India's cultural development. Due to frequent power outages and aberrant voltage conditions in India, it is critical to deliver water efficiently to the fields during normal conditions. This is accomplished by sending messages between the user's phone and GSM. This system was created using a Microcontroller that is linked to the GSM and the Induction motor. The microprocessor protects against overcurrent, dry run, and single phasing. It is envisaged that this application will supply water across the motor to a large extent. Here provide an extra feature of ON/OFF motor operation via GSM. The voltage and current values of the motor, as well as any system faults are tracked, and warning messages are displayed on the LED. If an error occurs, the contactor will trip.

Key words : Relay, GSM, LED, OVER CURRENT

INTRODUCTION

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OBJECTIVES

Numerous studies have revealed that up to 80% of faults on the majority of overhead lines are temporary. When one or more circuit breakers trip immediately to isolate a fault, such as an insulator flashover, the fault is declared to be transitory and does not return once the line is reactivated. At lower distribution voltages, faults are typically less transient (around the 80% range), while at higher sub-transmission and transmission voltages, faults are typically more transient (near the 90% range). In this project, flaws are found and after they are fixed, the motor automatically runs depending on whether they are temporary or permanent defects. One microcontroller is employed to identify issues such short circuits and overlunder voltages, voltage, shut off the motor, and show the message on the LED display. In the event of a short circuit, relays are utilized to operate the supply entailed off the load.

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- Over current Protection Phase failure detection.
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- If a short circuit exists, the LED will indicate it.
- During the motor's auto reset, minimize the

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This is to certify that Dr / Prof / Mr / Ms. **Guttikonda Chandra Babu** has presented paper entitled **A Novel Way To Detect The Islanding Condition Using PSO and Control The Voltage Current Of DG Using A PI Controller** in 2023 2nd International Conference for Innovation in Technology (INOCON), jointly organised by Departments of CSE, ISE, ECE, CSE (AI & ML), CSE (DS) at Sai Vidya Institute of Technology, Bengaluru, India held during 3rd - 5th March, 2023.

Dr. Shantakumar B Patil
Secretary and Outreach Chair

Dr. Ramesh Babu H S
General Chair

Minimization of Power Losses in the Distribution System by Controlling Tap Changing Transformer using the PSO Algorithm

Abstract— Earlier, power consumption was very less, and people were also less aware of electronic devices. Most people prefer natural methods for cooking, washing, grinding, ironing clothes, and other tasks. Recently, the power consumption is increasing as the number of consumers in the distribution system increases. ACs, washing machines, fans, TVs, rice cookers, refrigerators, and other appliances were in high demand. When fans, TVs, cooking gadgets, and washing machines are used during the day, the load requirement is higher than when they are used at night. As a result of the uncertainty in demand, power losses and low voltage will occur in the radial distribution system. To reduce these losses, the voltage profile must be improved. The primary goal of this research work is to reduce power losses in the distribution system by optimizing the tap settings of the distribution transformer by using the PSO algorithm and also achieve real and reactive power compensation through the placement of DG and capacitor banks, and the results are then analyzed by using MATLAB software. The backward forward sweep technique has been adapted to identify low voltage profile buses in the distribution system, and the proposed approach was then tested on the IEEE 69 bus system.

Keywords—Charging Stations, Distributed Generation, Distribution transformer, Electric Vehicles (EV), Radial Distribution System (RDS), Voltage Profile.

I. INTRODUCTION

Nowadays distributed generation plays a significant role in the power system. A system that transfers power to houses and industries is known as a Distribution system [1]. Transferring effective and reactive power to the consumers at distribution ends is a big challenge [2]. The fossil fuels such as coal, hydro, oil, gas, and nuclear are decreasing day by day. Due to the increment in industries and the world population rise [3]. Hence, the ongoing research of conventional generation is insufficient to meet the present energy demand. Therefore, to transfer the effective and reactive power to the consumers by the addition of DG in the distribution system [3]. The losses are reduced by the proper location and size of DG. There are different types of DG's are available those are solar power, photovoltaic systems, wind power, and small hydro turbines. A conventional supplies between the above types of DG's can drastically cut power losses in the distribution system [4]. The proper placement of DG's provides higher power quality, improves voltage profile, and reduction in power loss [5]. DG ratio were resolved by the Particle swarm optimization (PSO) method [6]. The proposed algorithm has been tested in the distribution system to establish the work [6].

In [7], [8], power consumption and energy expenditures are discussed for the capacitor located in RDS with teaching-learning-based optimization (TLBO) & self-adaptive harmony search algorithm (SHASA). IEEE 33 bus and 141 bus systems are considered test systems. The optimal outcomes are correlated with the PSO and plant growth simulation algorithm, and superior outcomes are captured compared with GA, PSO, HSA, and mixed integer linear

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Minimization of Frequency Deviations in Multi-Area Power System with SSSC

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Abstract— Generally, a large power system consists of small interlinked power systems. These small systems are known as single area systems and the entire large power system is known as a multi-area system. As technology is evolving day by day, the power loads on power systems have been increasing. Due to this, the sudden additions and rejections of load take place which causes the deviation of frequency in the system. The concerns leads to a raise of uncertainties in the systems as these can be reduced by using SSSC (Static Synchronous Series Compensator) device which belongs to the FACTS (Flexible AC Transmission Systems) devices. The main aim of this research work is to reduce frequency deviations in multi-area systems by using SSSC devices. Hence, the frequency deviation is reduced during load uncertainties. The results are then obtained through MATLAB/SIMULINK.

Keywords— Frequency Deviation, Load Uncertainty, Multi-Area System, Tie-line Power, Settling Time, SSSC Controller

I. INTRODUCTION

In modern days, there are so many applications for electrical energy such as electrical vehicles, railway traction systems, home appliances, and so on. So, there is a massive demand for electrical energy. Therefore, the load on the power system has been increasing continuously. The load on the power systems varies from time to time according to the demand of consumers. The immediate alterations of load causes instability in the power system, which leads to inequality between the load demand and power generation.

This causes the frequency deviations in the power systems. Large power systems comprise small power systems; these large power systems can be called multi-area power systems. Frequency plays a vital role in the power system. Large power systems comprise small power systems. Large power systems can be called multi-area power systems. If the frequency deviation above its actual value, there must be a need to power system generation or increase the load on the power system. If the frequency decrease below its actual value, it indicates generating an additional amount of power or to reject the load to balance the power system. Otherwise, the system goes to damage due to increased mechanical pressure, losses, and more. The objectives of this project is to modify the frequency deviations in multi-area power systems during the instability of load. The frequency fluctuations are reduced by using Flexible Alternating Current Transmission System (FACTS) devices. The SSSC devices are very helpful and efficient for diminishing the frequency deviations in the multi-area system. The SSSC devices are semi-conductor power electronics based equipment that is used to compensate the power systems to diminish the frequency instability. The applications of these devices are stability improvements, power flow control, and so on. Improving the stability of the system is one of the best applications of SSSC devices. So, these devices are selected for minimization of frequency deviations and increasing the system stability. This SSSC device evolved through power electronic devices. Two types of compensations are involved in these devices, they are series compensation and shunt compensation. By using these compensations the frequency deviations can be minimized in the power systems. There is a necessity to maintain the balance between the load demand and power generation in the system. This condition can be fulfilled by using SSSC devices effectively and reliably. Hence, the factors which are causing the frequency fluctuations can be improved by using these devices, and

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Minimization of Frequency Deviations in Multi-Area Power System with SSSC

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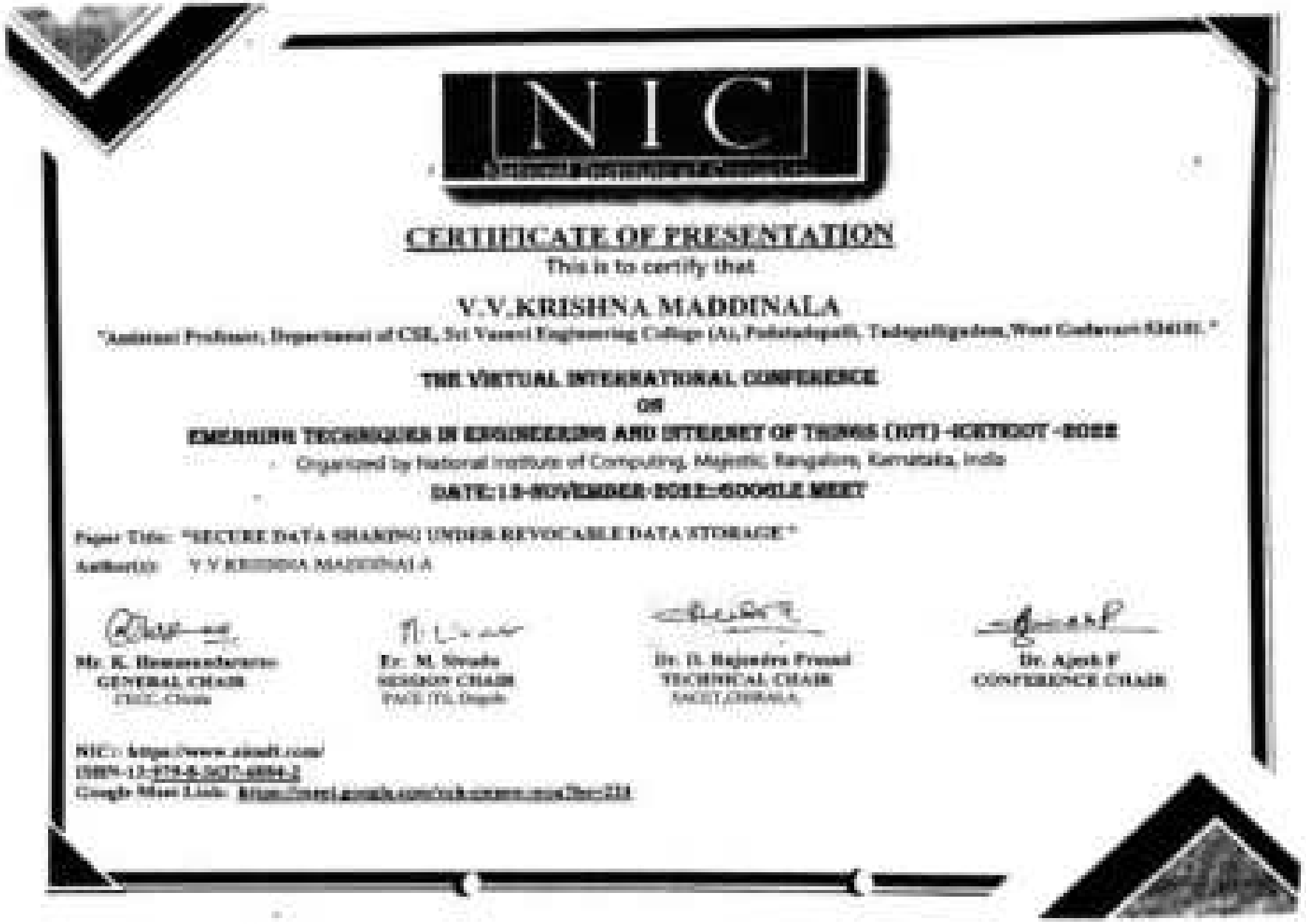

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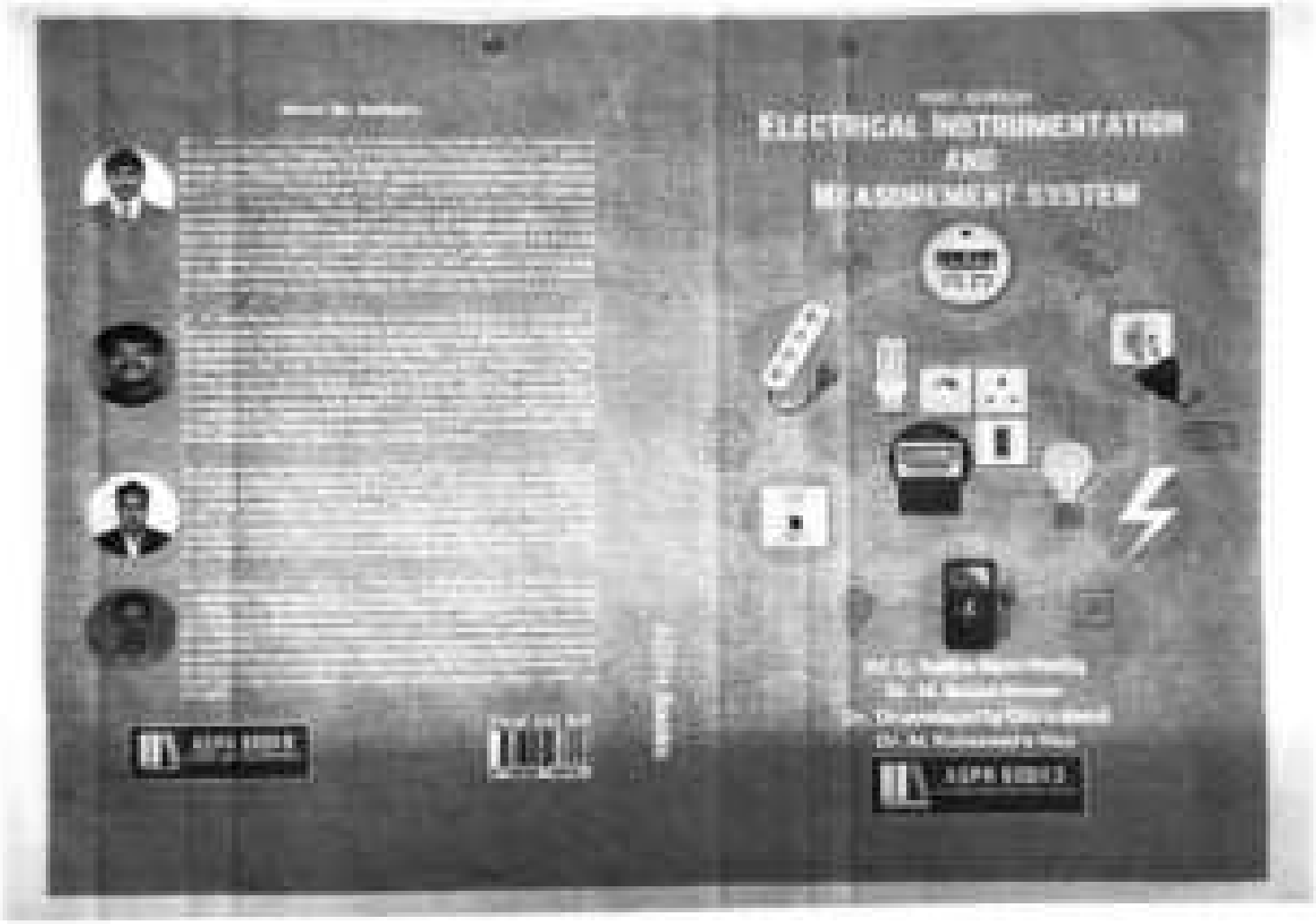
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ESP32 Based Irrigation System

- M. Rameswara Rao
- M. Satish Kumar
- M. Jagannadha Saraswathi
- Ch. Sai Sowjanya

- Conference paper
- First Online: 24 February 2023

- 196 Accesses

Part of the Engineering Cyber-Physical Systems and Critical Infrastructures book series (ECPSCI,volume 3)

Abstract

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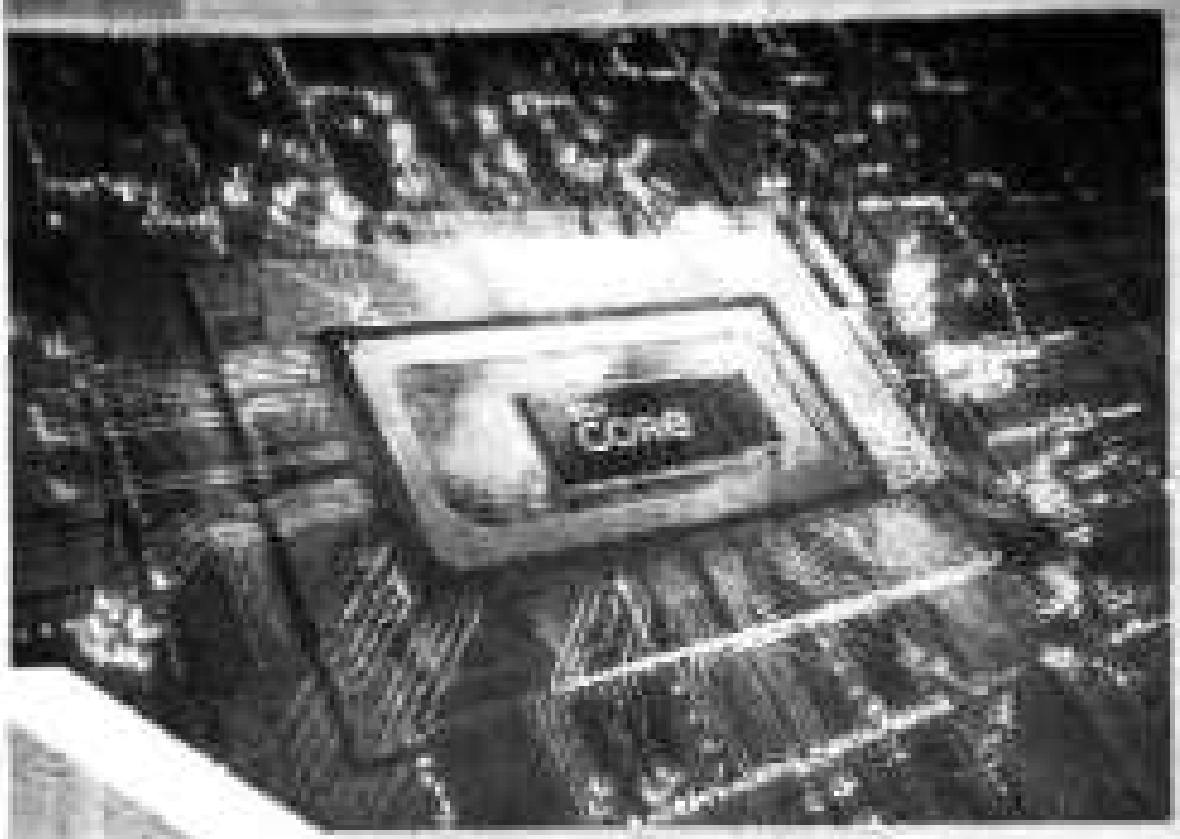

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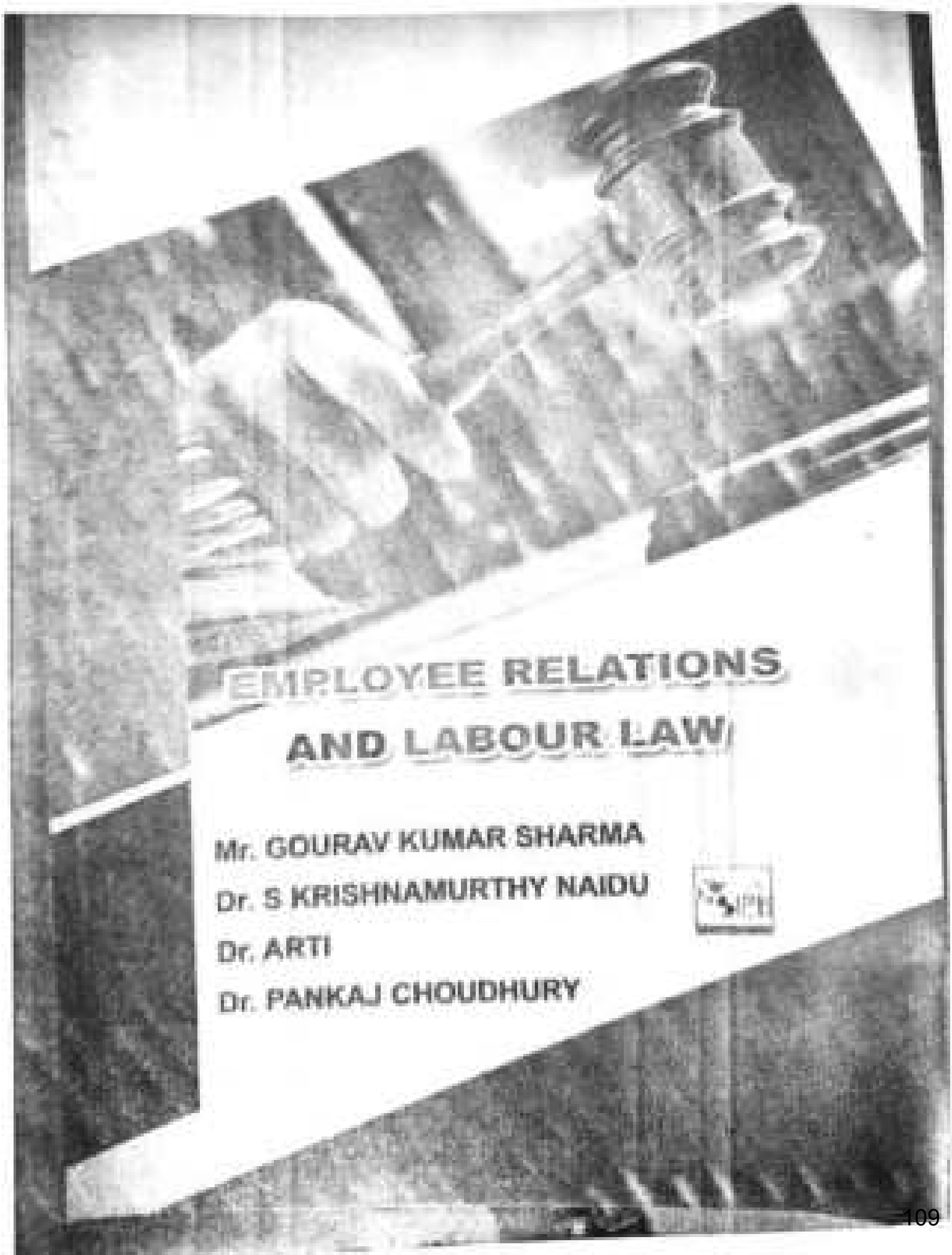
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Title of the Book: Employee Relations and Labour Law

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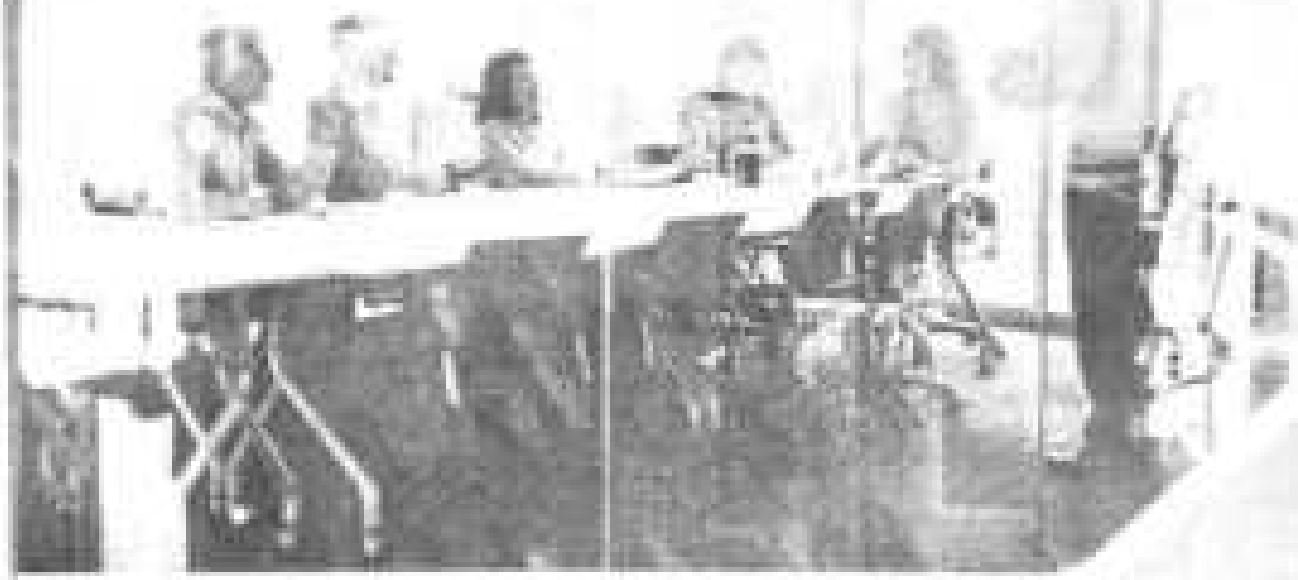

Dr. K. RAMBABU
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Dr. K. GANGA RAJU
Dr. S. KRISHNAMURTHY NAIDU

Title of the Book: Principles and Foundations of Corporate Governance

Edition: First - 2022

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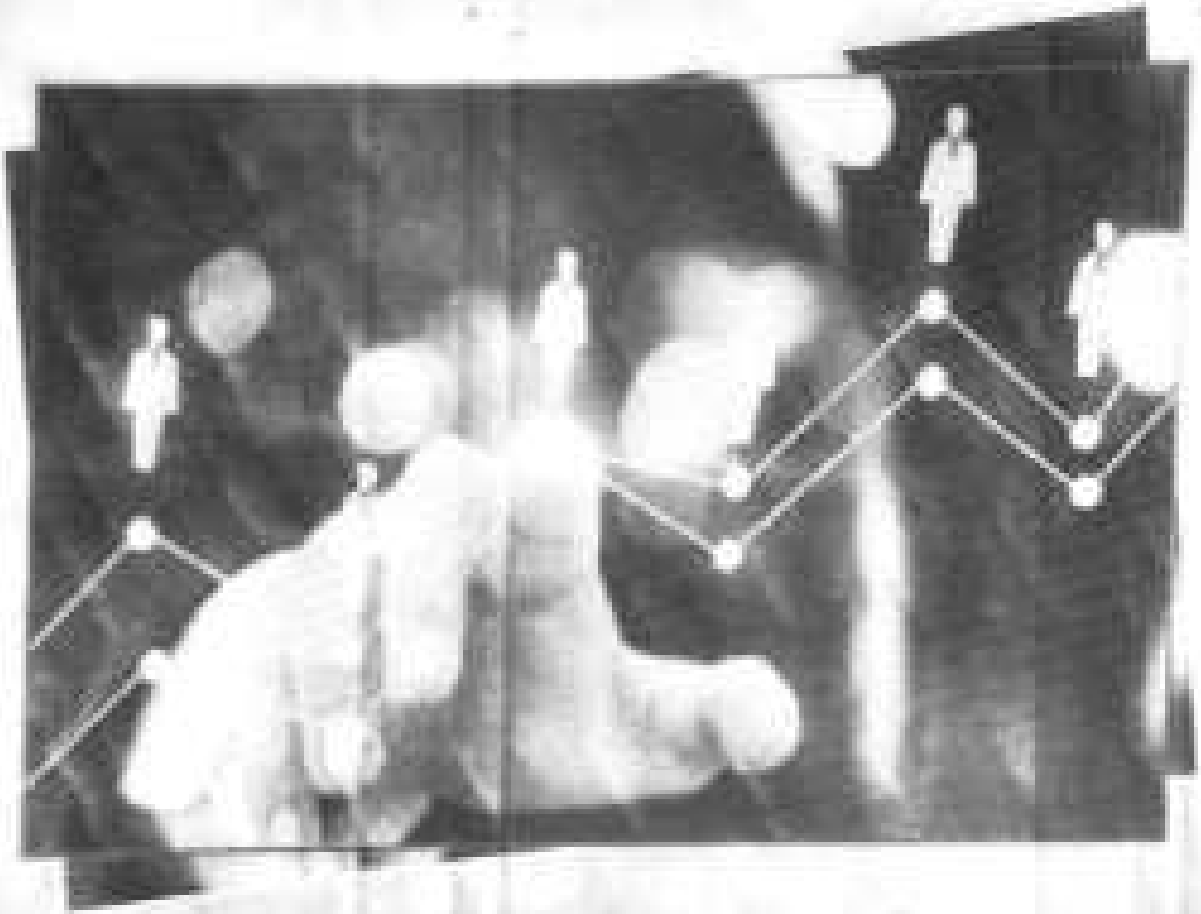

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Productive Inference of Convolutional Neural Networks Using Filter Pruning Framework

Shirin Bhanu Koduri and Lashma Gantasala

Abstract Deep neural networks have shown phenomenal performance in many domains including computer vision, speech recognition, and self-driving cars in recent years. Deep learning model's high performance normally comes at the cost of computation time and significant size of the model. These factors ultimately become a bottleneck for the deployment of deep learning models on battery and memory constrained devices, for example embedded systems or mobile phones. Over the past few years network acceleration is a burning topic. To address this task of compressing deep learning models, in the past few years many researchers have come up with compression techniques like pruning. The authors, in this paper, have tried to implement the filter pruning technique on VGG 16 architecture by using a clustering methodology to compress and deploy the model on resource-constrained devices like smartphones. The authors have also aimed at improving the inference time of the model for fast and considerably accurate predictions.

Keywords Deep learning · Deep neural networks · VGG16 · Filter pruning · Convolutional neural network (CNN) · Inference

1 Introduction

Today's world is governed by Machine Learning and Artificial Intelligence (AI). The living standards of the human race have shown exponential growth recently due to the influence of Machine Learning and AI. Artificial Intelligence finds its scope in every field such as medicine, defense, and economy and has also spread its roots in our daily life applications like Netflix suggestions, virtual Chatbots, Google assistant, Alexa, and whatnot. With the help of reinforcement learning, machines

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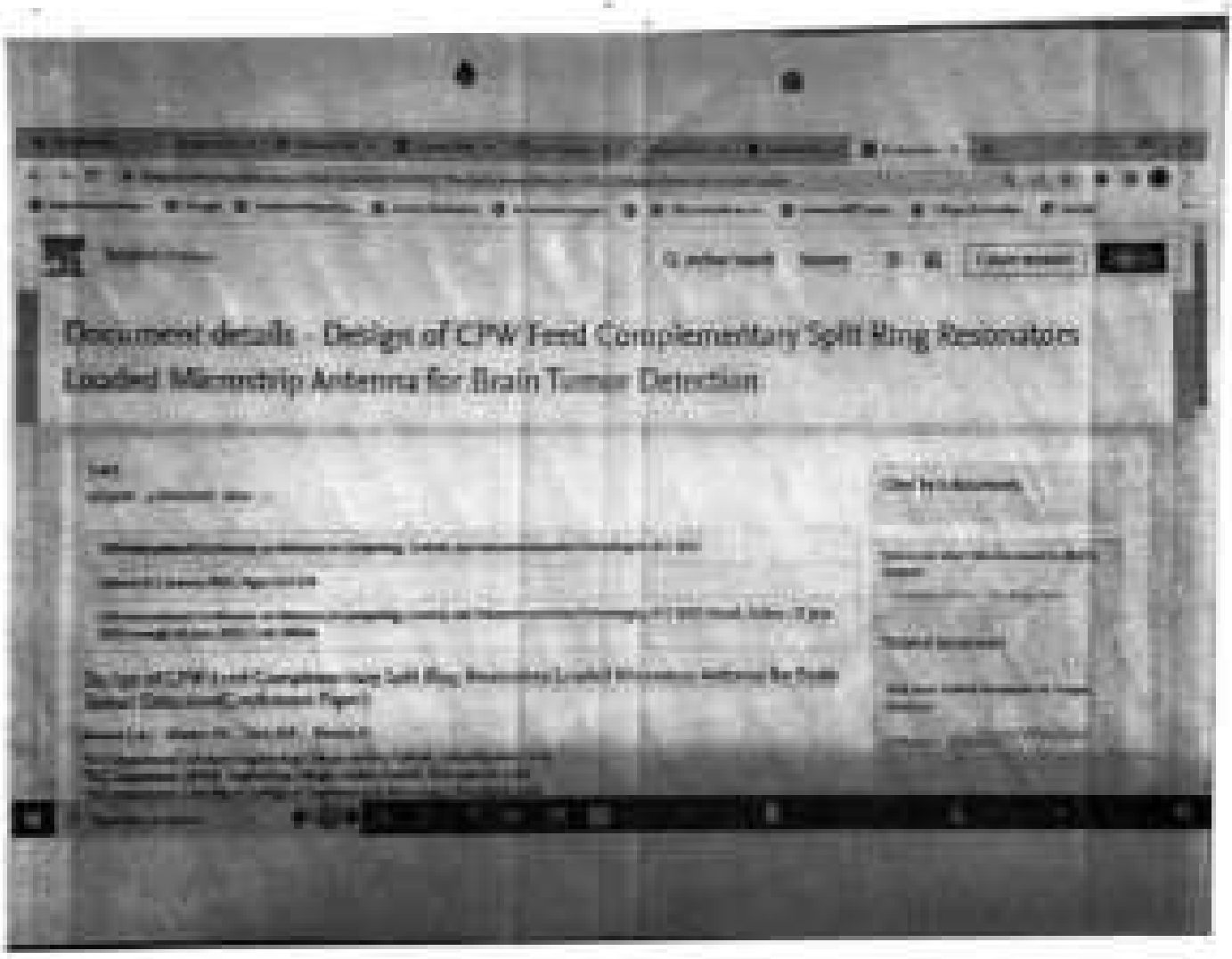
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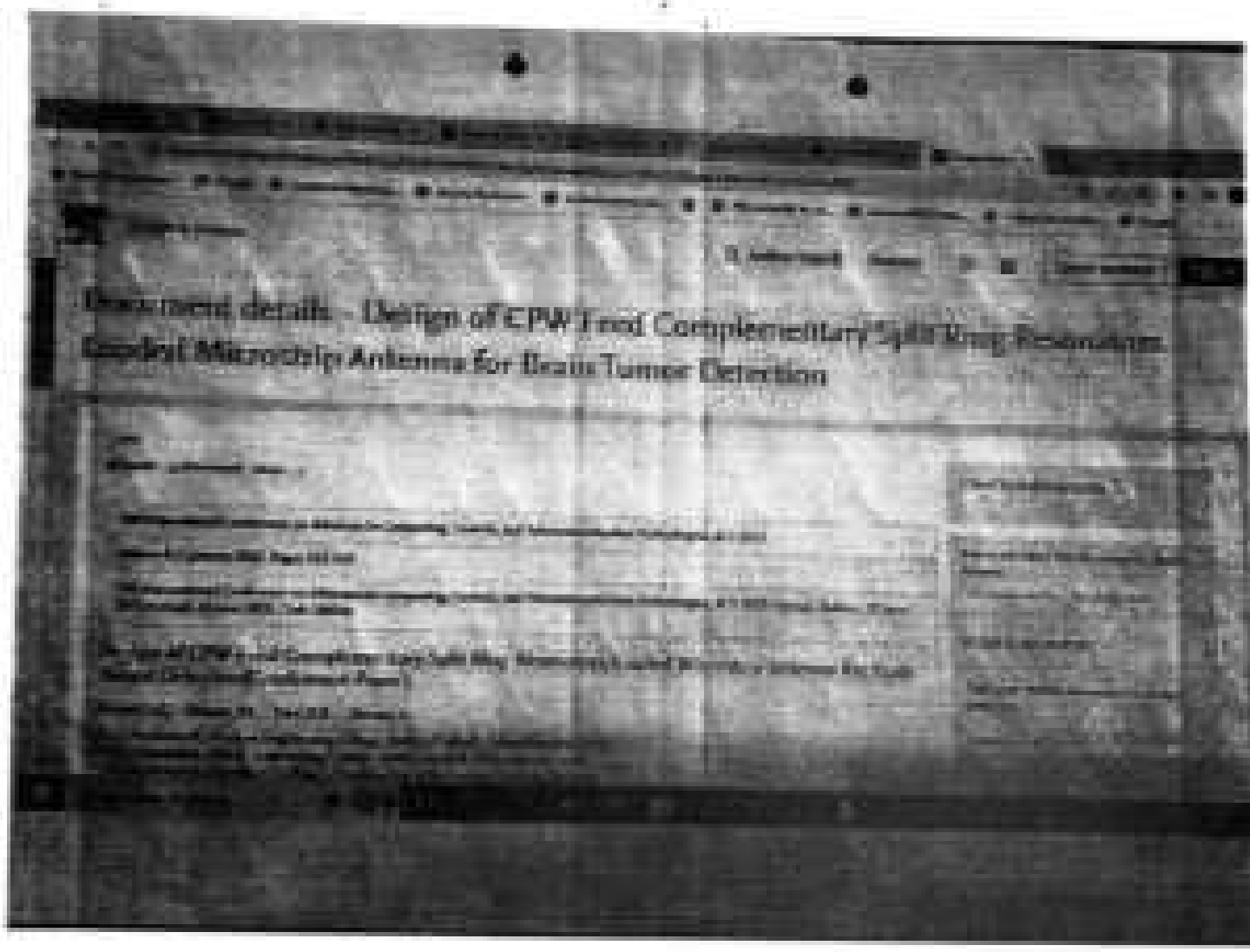
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Pattern Based Glaucoma Classification Approach using Statistical Texture Features

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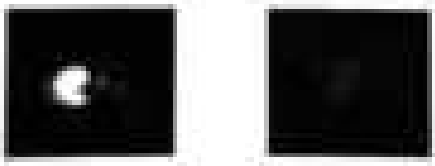
Abstract—Glaucoma is the leading eye disorder that may cause irreversible vision loss if not diagnosed quickly. Due to its invisible symptoms, it is very hard to detect glaucoma in the early stages hence increasing its impact and leads to blindness. Due to the limitations with the available medical tests, glaucoma diagnosis is preferred with computer-aided design (CAD) approach. Hence it is necessary to propose a model to diagnose glaucoma with retinal color fundus images. This paper proposed a new methodology based on local directional texture pattern (LDTP) descriptor and statistical texture features and classified using various machine learning schemes. The proposed method is validated on Drishti-GS1 and ACRIMA datasets with 101 and 705 images respectively and evaluated performance with 10-fold cross validation and 70:30 split ratio approach and reported results with sufficient performance metric values. From the obtained simulation results and metrics, we state that our approach achieves good classification performance compared to other existing approaches.

Index Terms—Glaucoma, computer aided design, local directional texture pattern, statistical texture features, Drishti-GS1, ACRIMA.

I. Introduction

Glaucoma is an eye disorder that occurs due to the internal eye pressure called intraocular pressure (IOP) which causes peripheral loss of vision and leads to blindness by damaging the optic nerve which carries information from eye to brain [1]. IOP normally in the range of 10 - 21mmHg (millimeters of Mercury) that can be measured using a tonometer [2]. If it is above than 21mmHg, it may change the optic disc structure that can cause glaucoma as shown in Fig. 1.



(a) Normal (b) Glaucoma

Fig. 1: Retinal optic disc images

As per recent statistics, more than 80 million glaucoma cases around the world are identified and it may reach over 80 million [3]. In India, glaucoma occupies second place after cataract among eye diseases. Glaucoma has no symptoms in the early stages. By the time when we identify a problem with our vision, it might be in the advanced stage. Among all the glaucoma cases, almost 90% are identified only at the time of the survey, that's why it can be referred to as a silent thief of sight [4]. Regular medical eye checks up methods are very expensive and require skilled assistants, that's why computer-aided design (CAD) systems come into existence. Many researchers worked on glaucoma detection by extracting different features and classified using machine learning schemes [5].

Chakravarty et al. [6] fused image based and segmentation-based features and implemented on Drishti-GS1 dataset along with a person left out using support vector machines (SVM). Elias Pires et al. [7] collected a new clinical dataset ACRIMA with 705 images and developed an automatic glaucoma assessment using convolutional neural networks (CNN) with 10-fold cross validation (CV). Similar all, Serte et al. [8] validated their method with a combination of multiple training and testing datasets with three deep learning models and verified using five public datasets.

Chen et al. [9] extracted a hybrid features set from various descriptors and validated on various public datasets with multiple kernel (MK) classifier. Claro et al. [10] extracted pyramid histogram oriented gradient (PHOG) and Gabor filter-based features and then classified using SVM with Drishti-GS1 and high resolution fundus (HRF) datasets. Liu et al. [11] developed a deep neural network (DNN) and extracted contrast and color features and validated it on a private dataset and ACRIMA dataset.

Fondon et al. [12] used a fractal analysis wavelet transform (FWHT) and extracted features and reduced dimensionality with linear discriminant analysis (LDA) and classified using least squares SVM. A mobile app called Yarbiz is designed by Guo et al. [13] from the U-net model with connecting path (CP) and fairness loss function (FL) and validated its functionality with Drishti-GS1 and ORIGA datasets using gradient boosting decision tree (GBDT) classifier. Elangovan et al. [14] designed an 18-layer CNN model to classify glaucoma with 70:30 split ratio approach and validated it on two public datasets.

From the literature, we observed that some authors implemented their work on private datasets. Due to unavailability of private dataset, those results cannot be reproduced. Deep

Regulation of Frequency in Multi-Source Two Area Power System with TCSC

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Abstract: Nowadays most people are aware of environmental changes based on greenhouse gases and pollution, the electric vehicle is one of the solutions to reduce the CO_2 in the atmosphere. The electric vehicle needs the charging point/exchanging stations to charge the battery placed in it. The charging time of the battery depends on the vehicle size, battery capacity and if the vehicles are charged at the peak hours, it leads to region the frequency collapse. To avoid such collapses the interconnected systems to exchange the power flows and maintain the system remains stable. But sudden and significant load addition it leads to create the frequency deviations in both systems which are the systems were connected. The primary objective function is to minimization of deviation in frequency (Δf). In addition with frequency regulations under load added conditions the secondary objective of this paper is to minimize deviations in the power (ΔP). The paper proposes the FACTS controller-based load frequency controller (LFC) scheme. Here in the paper multi-area system is created with the considerations of non-reheat, reheat, and hydro types of turbines taken into consideration.

Keywords: Deviation frequency, FACTS, Load Frequency Controller, Load scheduler, Thyristor power.

I. INTRODUCTION

Generally, the electric load demand is unpredictable, it may vary based on atmospheric conditions and people's needs. Various types of conventional and hybrid techniques are used to forecast the load demand based on historical data. Unscheduled power generation is increased at this era, to avoid interruptions has occurs. The DG systems may operate in either stand-alone or a grid-connected mode according to the planning of the installation. In the grid interconnected systems, the changes in the distribution system loads may affect the systems frequency when a large amount of load additions/rejections. Fig. 1 represents the interconnected system represented by area 1 & area 2 through a tie-line. A feedback system is employed to balance the system stability is known as load frequency control (LFC). Load frequency control is the representation of the link between the generation and utilization sides in the power system network. When a power system undergoes sudden load changes more or less high in size it causes oscillations in the system frequency.

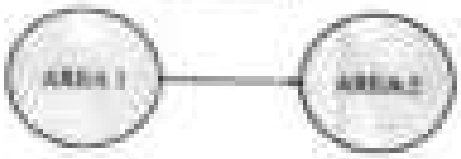

Figure 1: Two-area power system.

If the power system has an interconnected tie-line that is the load changes, the system goes on tie-line power disturbances also. Due to these types of long-term oscillations in frequency and tie-line power, the rotor angle increases and the terminal voltage of the generators go to change their terminal values and it leads to voltage collapse. Many researchers addressed this problem by different conventional mathematical control-loop proposals and as well as optimization techniques used to tune the controller parameters to reduce the oscillations.

II. LITERATURE SURVEY

Flexible alternating current transmission system is used to tune the load-based PI controller to minimize the deviations frequency and tie-line power deviations. TCSC-based LFC is also developed and tested on the dynamic load changes [1]. The effect of electric vehicles' impact on the distribution network is discussed with help of a multi-area power system to address the load frequency control problem. The author compared various types of PI-based

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Regulation of Frequency in Multi-Source Two Area Power System with TCSC

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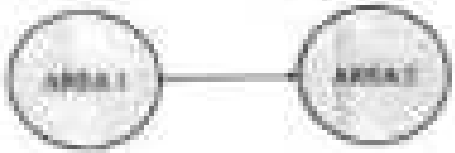
Keywords: Deviation frequency, FACTS, Load Frequency Controller, Load models, Non-linear power

I. INTRODUCTION

Generally, the electric load demand is unpredictable, it may vary based on atmospheric conditions and people's needs. Various types of conventional and hybrid techniques are used to forecast the load demand based on historical data. Distributed power generation is increased in this era, to avoid interferences like issues. The DG systems may operate in either stand-alone or a grid connected mode according to the planning of the installations. In the grid interconnected systems, the changes in the distribution system loads may affect the system frequency when a large amount of load addition/rejection. Fig. 1 represents the interconnected system represented by area 1 & area 2 through a tie line. A feedback system is employed to balance the system stability in terms of load frequency control (LFC). Load frequency control is the representation of the link between the generation and utilization sides in the power system network. When a power system undergoes sudden load changes more or less than it causes oscillations in the system frequency.



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If the power system has an interconnected one then in the load changes, the system goes to derive power disturbance also. Due to these types of long-term oscillations in frequency and tie line powers, the rotor angle position and the terminal voltage of the generators to change their nominal values and it leads to voltage collapse. Many researchers addressed this problem by different conventional supplementary closed-loop proposals and as well as optimization techniques used to tune the controller parameters to reduce the oscillations.

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Keywords: *deviation frequency, FACTS, Load Frequency Controller, Load sudden, Tie-line power*

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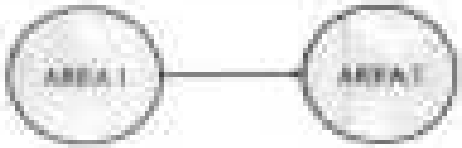

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Keywords: Deviation frequency, PI/PID, Load Frequency Controller, Load sudden, Tie-line power

I. INTRODUCTION

Generally, the electric load demand is unpredictable, it may vary based on atmospheric conditions and people's needs. Various types of conventional and hybrid techniques are used to forecast the load demand based on historical data. Distributed power generation is increased in the city to avoid transmission line losses. The DG consists near system in either stand-alone or a grid-connected mode according to the planning of the installation. In the grid interconnected system, the changes in the distribution system loads may affect the system frequency when a large amount of load addition/rejection. Fig. 1 represents the interconnected systems represented by area 1 & area 2 through a tie-line. Similarly system a controller to balance the system stability is known as load frequency control (LFC). Load frequency control is the representation of the link between the generation and utilization sides in the power system network. When a power system undergoes sudden load changes more or less high it tends it creates oscillations in the system frequency.

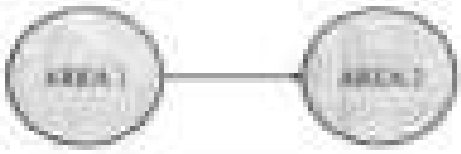

Figure 1: Two-area power system

If the power system has an interconnected one that at the load changes, the system goes to no-load power disturbances also. Due to these types of long-term oscillations in frequency and tie-line powers, the rotor angle position and the terminal voltage of the generator go to change their nominal values and it leads to voltage collapse. Many researchers addressed this problem by different conventional mathematical control/tech proposals and as well as optimization techniques used to tune the controller parameters to reduce the oscillations.

II. LITERATURE SURVEY

Modified differential evolution technique is used to tune the fuzzy-based PI controller to minimize the deviations frequency and tie-line power deviations. PI/PID based LFC is also developed and tested on the dynamic load changes [1]. The effect of physical constraints like governor dead-band and generation rate constraint (GRC) on the performance of the load frequency control problem is discussed with help of a multi-area power system to address the load frequency control problem. The author compared various types of PI-based

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High Step-Up Voltage Gain Boost Chopper-Fed DC-DC Converter for Medium Voltage Applications

[redacted]

ABSTRACT:
PV systems have generally low voltage levels, although there are significant limits. The major goal is to increase the voltage gain while maintaining high system efficiency. The system currently has some faults, such as input currents not being continuous, significant current ripple, and leakage currents. There is the possibility of boost the voltage gain while using a transformer, but it occupies space, is expensive, and has to be considered every time the transformation ratio. These drawbacks are avoided by utilizing a 3-switch DC-DC converter. This paper proposes a High step-up voltage gain boost chopper-fed DC-DC converter for medium voltage applications. The proposed converter helps to improve system voltage gain while reducing voltage stress on capacitor switches and current ripple. The proposed converter topology is simulated by comparing with other converter configurations. the proposed topology shows robust performance and better results in terms of high voltage gain, low voltage stress on the energy storage elements, and less harmonic content in the output voltage. Simulation results are verified and compared with other existing configurations.

Keywords: DC-DC converter, High voltage gain, Medium voltage applications, Voltage stress, 3-switches

I. INTRODUCTION

Electrical and electronic engineering combined design creativity with scientific concepts to develop new electrical products, applications, and systems, as designing new types of electronic materials and simplifying them from scratch. By enhancing healthcare by developing complex electronics for researching system control procedures for vehicles and semiconductors.

In electrical power engineering three aspects play very important roles, they are power generation, transmission, and utilization. We can preserve a vibrant economy and a healthy environment by using power electronics. Simultaneously, new power electronics refers to energy conversion circuits that use power electronic components, which are used to control and convert energy with more efficiency. The type of input and output may be divided into the power conversion devices they are AC-AC converters, DC-DC converters, DC-DC converters, and AC-AC converters. Multi-input power converters were developed for certain applications. This steps necessitates a large amount of conversion, resulting in higher equipment costs. As a result, the system efficiency and reliability may suffer as well as increasing losses. To counteract the effects of the foregoing problems, transformer-based converters were developed. They provide excellent single-stage power conversion, increasing efficiency and reliability while lowering costs. Transformer-based converters are divided into two types: transformer-coupled inductors (TCIM) and non-transformer-coupled inductors (or TCIM). Non-transformer coupled inductors have more advantages than transformer-coupled inductors, but they have a lower voltage gain. The n-TCIM is divided into various types of power converters that are utilized to boost voltage gain [2].

Maximum power point tracking (MPPT) is one of the strategies for PV systems. There are numerous MPPT techniques available, and when selecting the best MPPT method, a main factor for requirements of accuracy, tracking, system stability, and cost-effectiveness. The P&O methodology was also used to track the maximum power from a PV unit. However, oscillations were a problem. The neural method is used to circumvent the above algorithm issues.

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ABSTRACT:
PV systems have generally low voltage levels, although there are significant limits. The major goal is to increase the voltage gain while maintaining high system efficiency. The system currently has some faults, such as input current not being continuous, significant current ripple, and leakage currents. There is the possibility of boost the voltage gain while using a transformer, but it occupies space, is expensive, and has to be considered every time the transformation ratio. these drawbacks are avoided by utilizing a 2-source DC-DC converter. This paper proposes a High step-up voltage gain boost chopper-fed DC-DC converter for medium voltage applications. The proposed converter helps to improve system voltage gain while reducing voltage stress on capacitor switches and current ripple. The proposed converter topology is examined by comparing with other converter configurations, the proposed topology shows robust performance and better results in terms of high voltage gain, low voltage stress on the energy storage elements, and low harmonic content in the output voltage. Simulation results are verified and compared with other existing configurations.

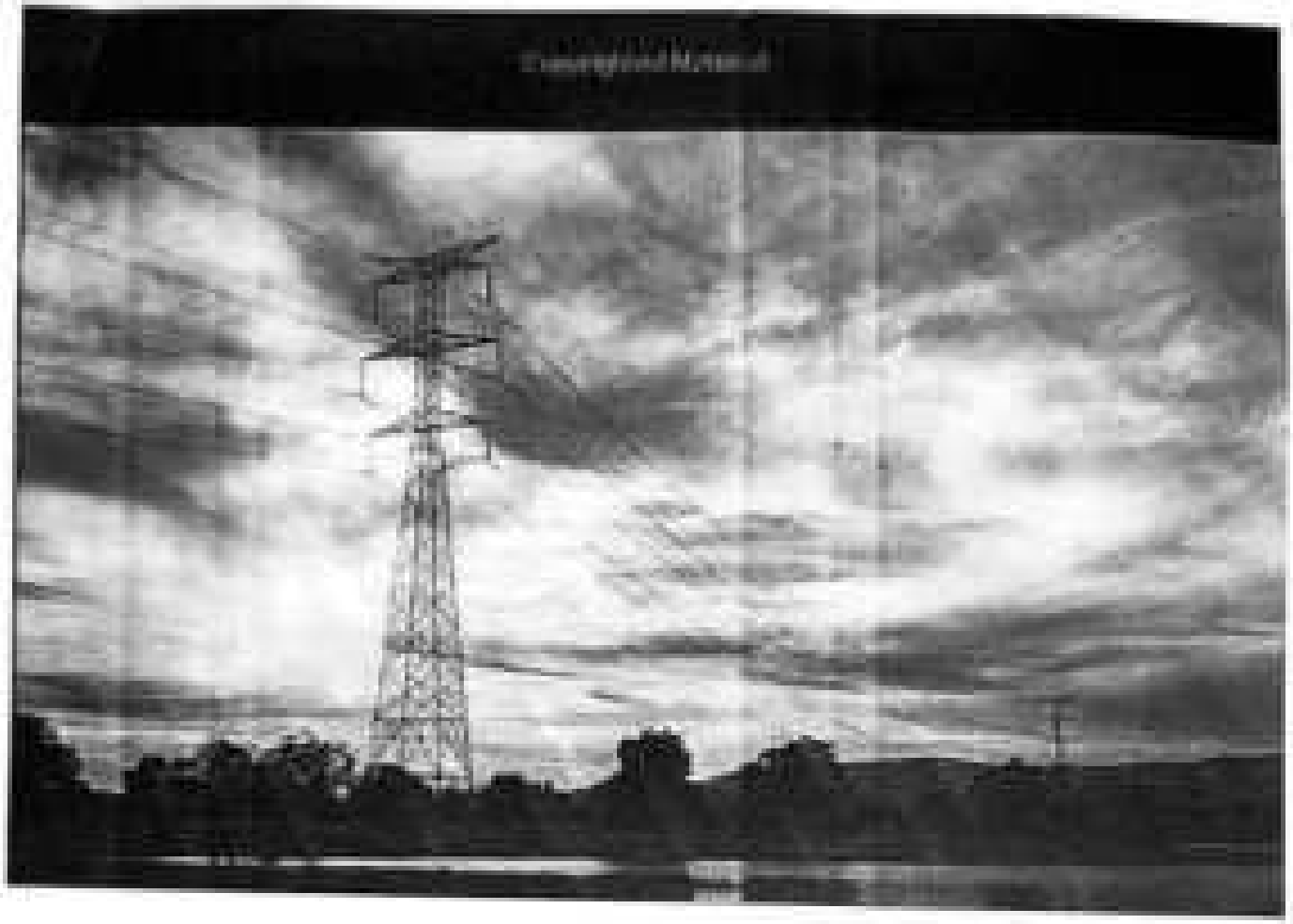
Keywords: DC-DC converter, High voltage gain, Medium voltage applications, Voltage stress, 2-source.

I. INTRODUCTION

Electrical and electronic engineering combines design concepts with scientific concepts to develop new electrical products, applications and systems i.e. to designing new types of electronic materials and integrating these into systems to advancing healthcare by developing complex biosensors or researching system control principles for vehicles and communications.

In electrical power engineering three aspects play very important roles, they are power generation, transmission, and utilization. We can perceive a robust economy and a healthy environment by using power electronics. Fundamentally said, power electronics refers to energy conversion circuits. Any system that has power electronic components, which are used to control and convert energy, will work efficiently. The type of input and output can be divided into the power conversion devices they are AC-AC converters, DC-DC converters, DC-DC converters, and AC-AC converters. Multi-stage power conversion was necessary in several applications. This stage consumes a huge amount of conversion, resulting in higher equipment costs. As a result, the system's efficiency and reliability may suffer, as well as increasing losses. To counteract the effects of the foregoing problems, impedance-based converters were developed. They permit excellent single stage power conversion, increasing efficiency and reliability while lowering costs. Impedance-based converters are divided into two types: transformer-coupled inductor (TCIB) and non-transformer-coupled inductor (n-TCIB). Non-transformer-coupled inductor have more advantages than transformer-coupled inductor, but they have a lower voltage gain. The n-TCIB is divided into various types 2 source networks that are utilized to boost voltage gain [1].

Maximum power point tracking (MPPT) is one of the strategies for PV systems. There are numerous MPPT techniques available, and when selecting the best MPPT method, it must fulfill the requirements of accuracy tracking, transient stability, and steady-state response. The P&O methodology was also used to track the maximum power from a PV cell; however, oscillations were a problem. The second method is used to overcome the above algorithm issues.



Veera Venkata Rama Rao Pokanati

High Voltage Engineering for Beginners

Principles and fundamentals

LAP LAMBERT Academic Publishing

Sustainable use of solid waste in the production of light weight concrete: A review

Smart Temperature Measurement System Using Raspberry-PI

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Abstract: From the last few years, several developments are being made in the area of automatic temperature prediction, including wearable sensor technologies (WST), infrared thermography (IRT). The development of infrared temperature measurement is useful to measure moving and high-temperature objects without interaction, easily and accurately. Under the premise of high measurement precision and low cost, an infrared thermometer can be utilized for high-temperature objects. For an object, a simple and precise measurement of the surface temperature was performed. A new IoT approach to measure, detects the temperature and collects the data, and uses Web compatibility for data access is device that uses sensor module MLX90614 integrated with a Raspberry pi development board and offers object, ambient temperature monitoring. If the temperature exceeds beyond the threshold value the system sends an alert message through Email.

Keywords: wearable sensor technologies (WST), infrared thermography (IRT), MLX90614, Raspberry pi

I. INTRODUCTION

These days health screening become a greatest challenge in people's life. If the necessary mechanism starts, the body temperature rises to combat with infection, so the body temperature is assumed as an important parameter since ancient times to Understand the reaction of your body to an infection. For this reason, one of the first clinical measurements is body temperature. The usual temperature of the body varies between 36.5°C and 37.5°C. The individual body temperature depends on various factors, i.e., age, exercise, infection, and the position of the body at which the measurement is made.

Indoor living environments include different types of rooms, and places where individual works in a group or a place such as offices, hospitals, classrooms, libraries, recreational spaces, public service rooms or even vehicle cabins. Schools, in particular, are an important location for temperature surveillance.

Using touch and contact techniques, the temperature can be determined. To have an accurate touch measurement, the sensor must be in perfect alignment with the object, which can lead to longer response times and reading inaccuracies often by sudden temperature. In addition, infrared radiation non-contact measurements provide quick and reliable set of temperature data without requiring repeated data. One of the major needs of this contactless measurement in this pandemic i.e (COVID-19 where body temperature is the first parameter to check.

MLX90614 infrared thermometer is a non-contact temperature sensor module for Embedded compatible devices. An infrared thermometer works to measure the object's temperature by infrared radiation in the form of an electromagnetic wave through the light emitted on the object. The Methodology of a powerful infrared sensing device with an ultra-low noise amplifier, which uses non-contact temperature sensing to collect temperature information without touching any object surface. This achieves high precision and resolution measurements. It has been calibrated with a factory digital system management bus (SMBus) two temperature ranges -40 ° C to 125 ° C for sensor temperature and -70 ° C to 380 ° C for sensor temperature. object with a standard efficiency of ± 0.5 ° C around ambient temperature. An accuracy of ± 0.2 °C in a limited temperature range around the human body temperature has been offered a special edition for medical applications.

II. LITERATURE SURVEY

[1] An advanced compact method was designed for the continuous monitoring of heart rate and body temperature. With the use of Arduino UNO, the system provides information on our heart rate and body temperature on the portable device in real

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Smart Temperature Measurement System Using Raspberry-PI

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I. INTRODUCTION

These days Health screening become a greatest challenge to people's life. If the necessary precautions exist, the body temperature rises to combat with infection, so the body temperature is assessed as an important parameter since ancient times to Understand the reaction of your body to an infection. For this reason, one of the first clinical measurements is body temperature. The usual temperature of the body varies between 36.5OC and 37.5OC.The individual body temperature depends on various factors, i.e., age, exertion, infection, and the posture of the body at which the measurement is made.

Indoor living environments include different types of rooms, and places where individuals works as a group in a place such as offices, hospitals, classrooms, libraries, recreational spaces, public service rooms or even vehicle cabins. Schools, in particular, are an important location for temperature surveillance.

Using touch and contact techniques, the temperature can be determined. To have an accurate touch measurement, the sensor must be in perfect alignment with test object, which can lead to longer response times and reading inaccuracies offset by ambient temperature. In addition, infrared radiation non-contact measurements provide quick and reliable set of temperature data without requiring expected data. One of the major needs of this contactless assessment is the pandemic i.e. COVID-19 where body temperature is the first parameter to check.

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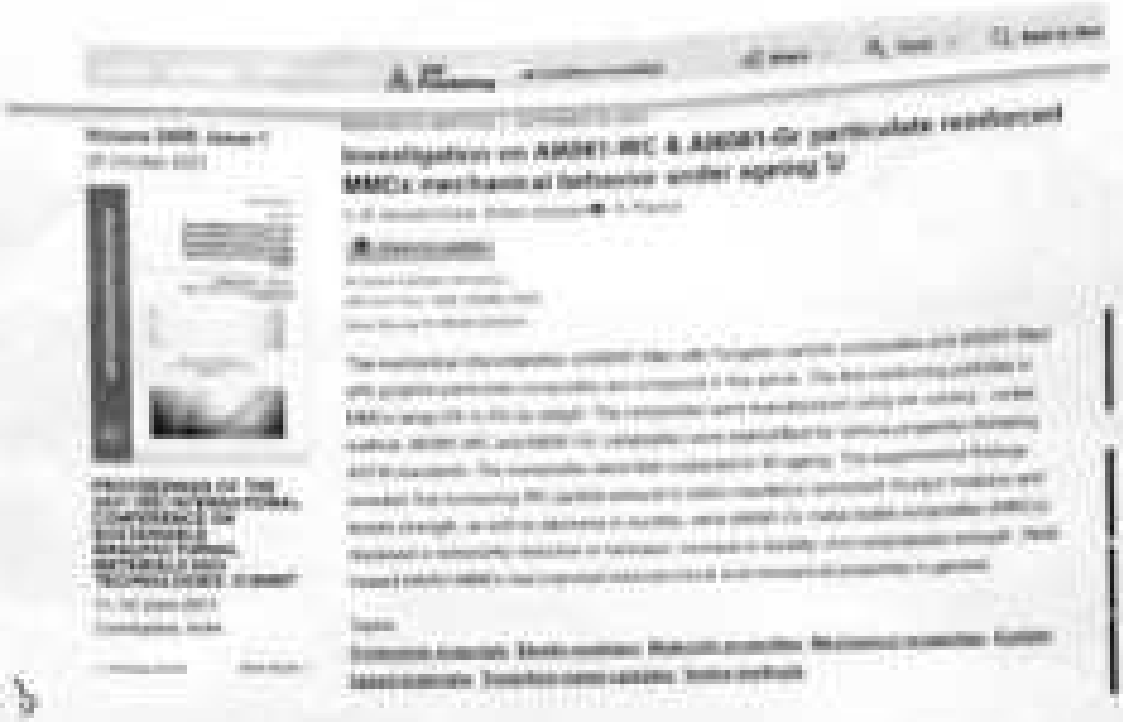

Investigation on AA5061-WC & AA5061-Gr particulate reinforced MMCs mechanical behavior under ageing

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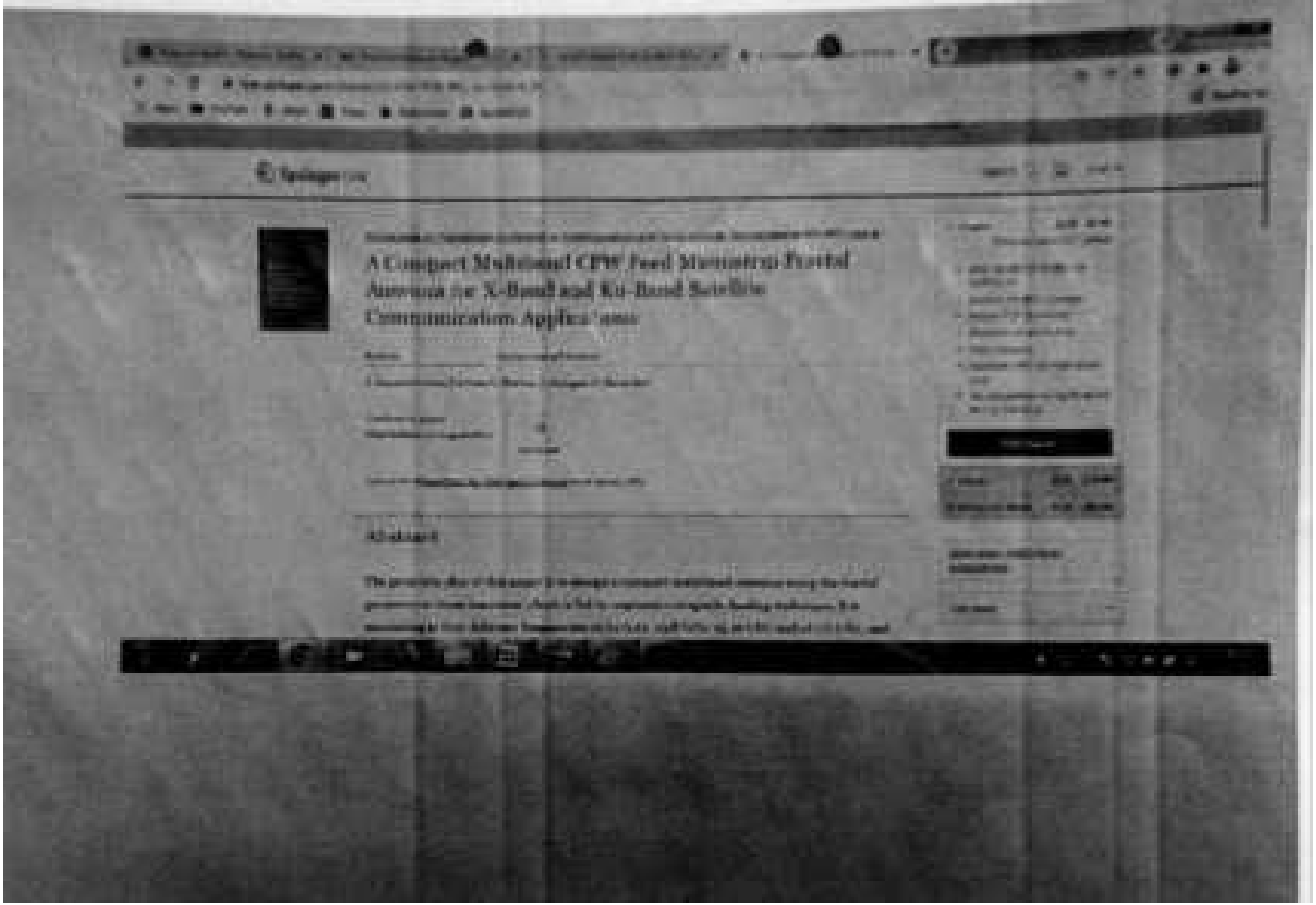

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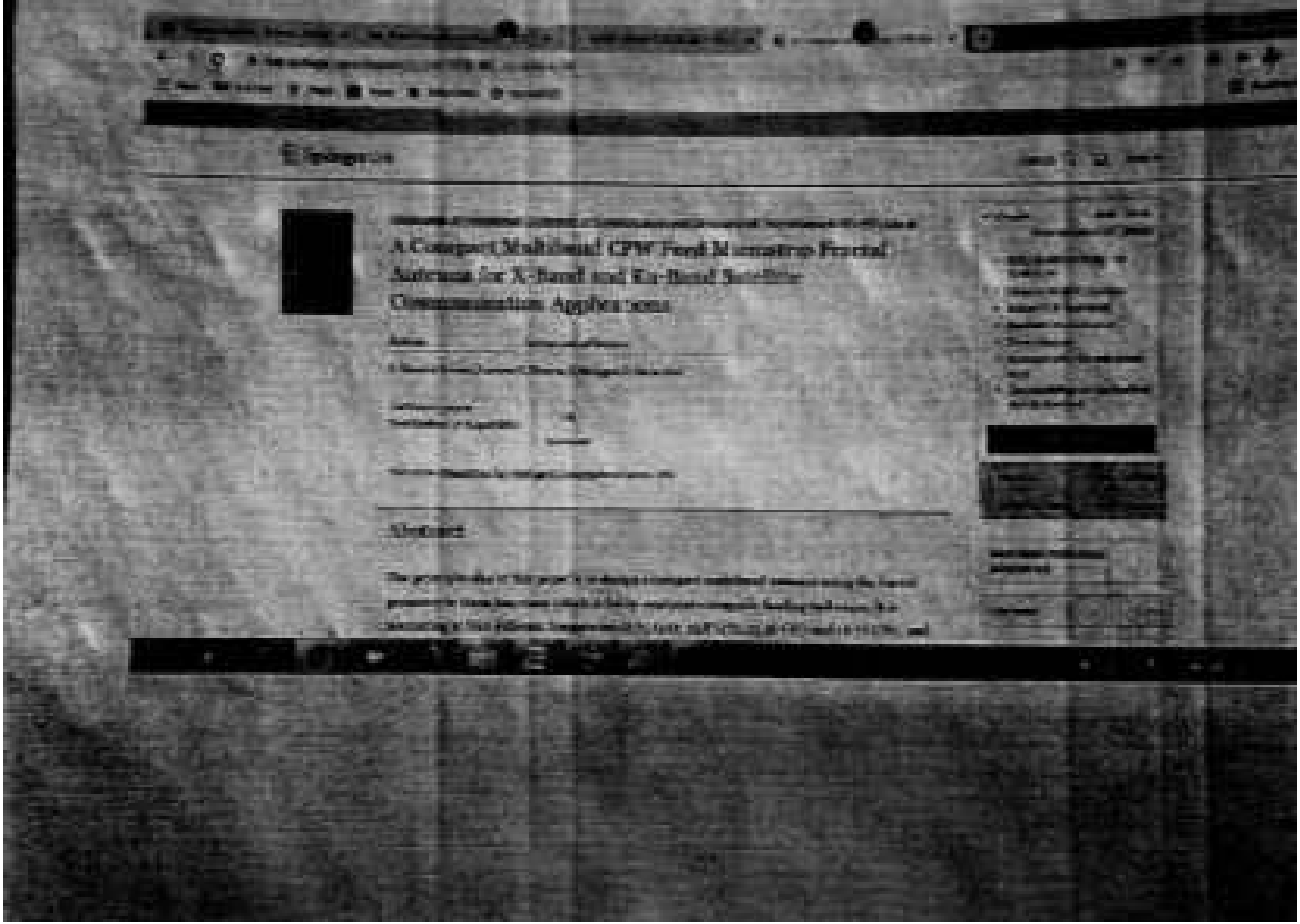

A Compact Multiband CPW Feed Microstrip Frontal Antenna for X-band and Ka-Band Satellite Communication Applications

Abstract

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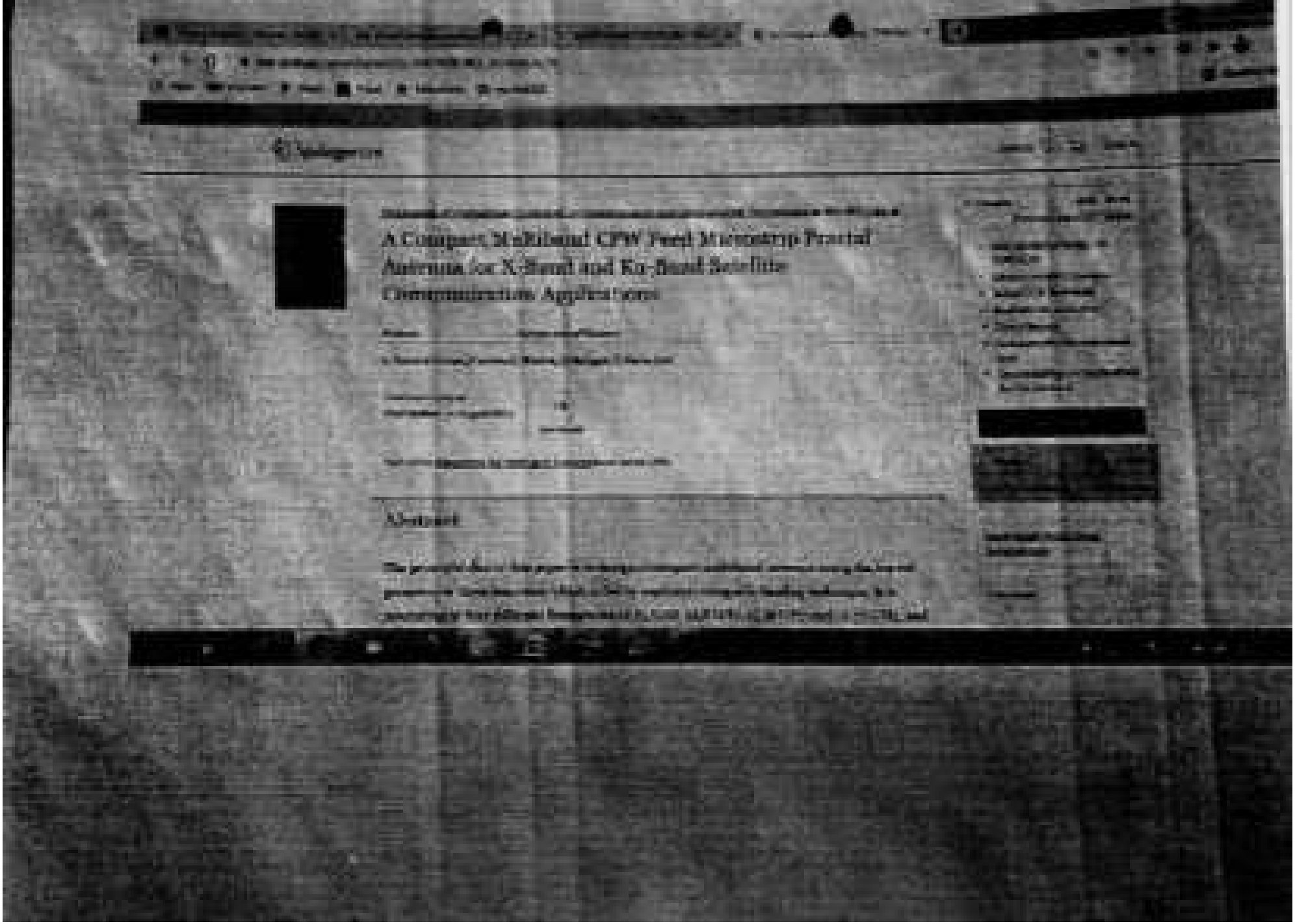

A Compact Multiband CPW Fed Microstrip Printed Antenna for X-Band and Ku-Band Satellite Communication Applications

Abstract

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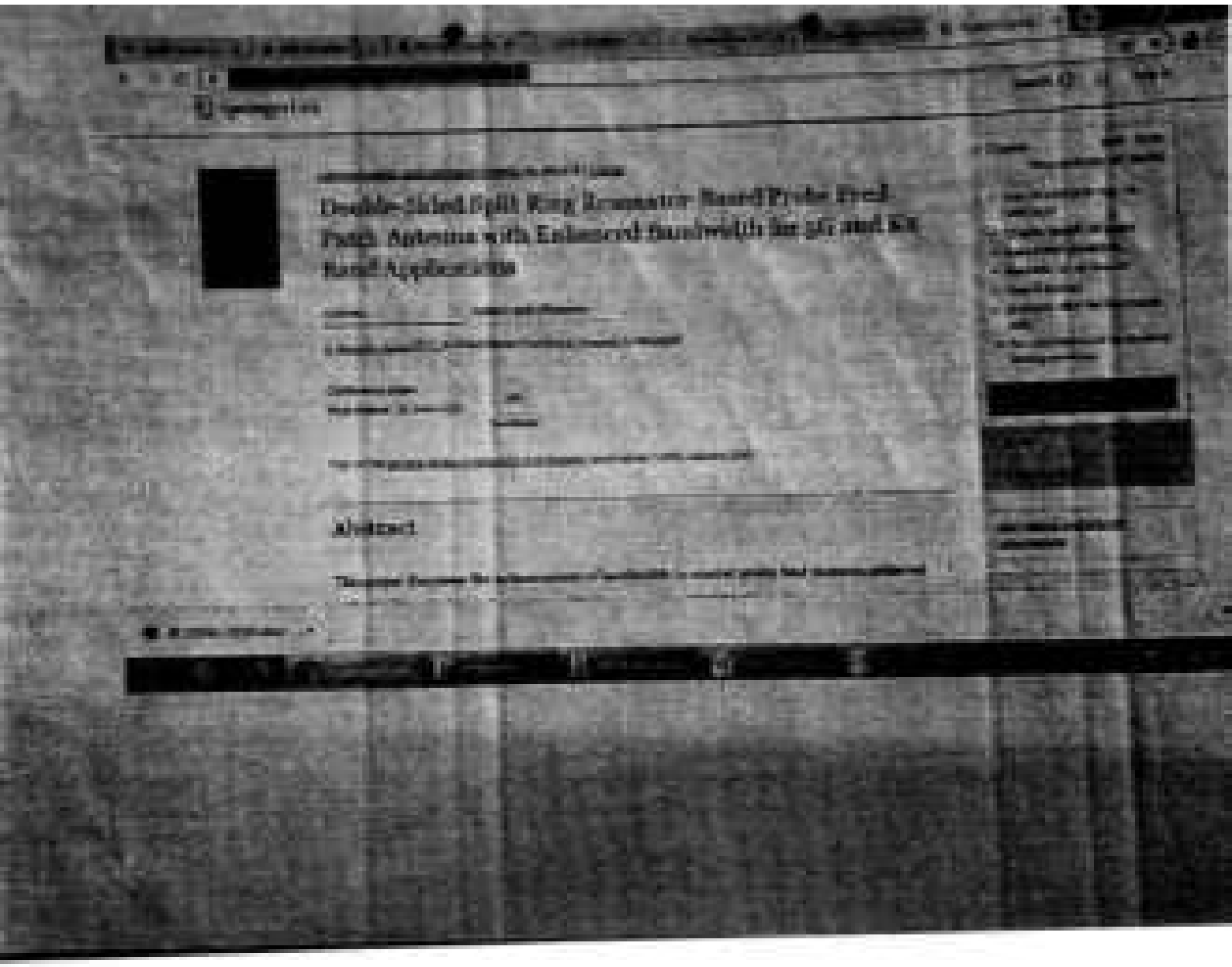

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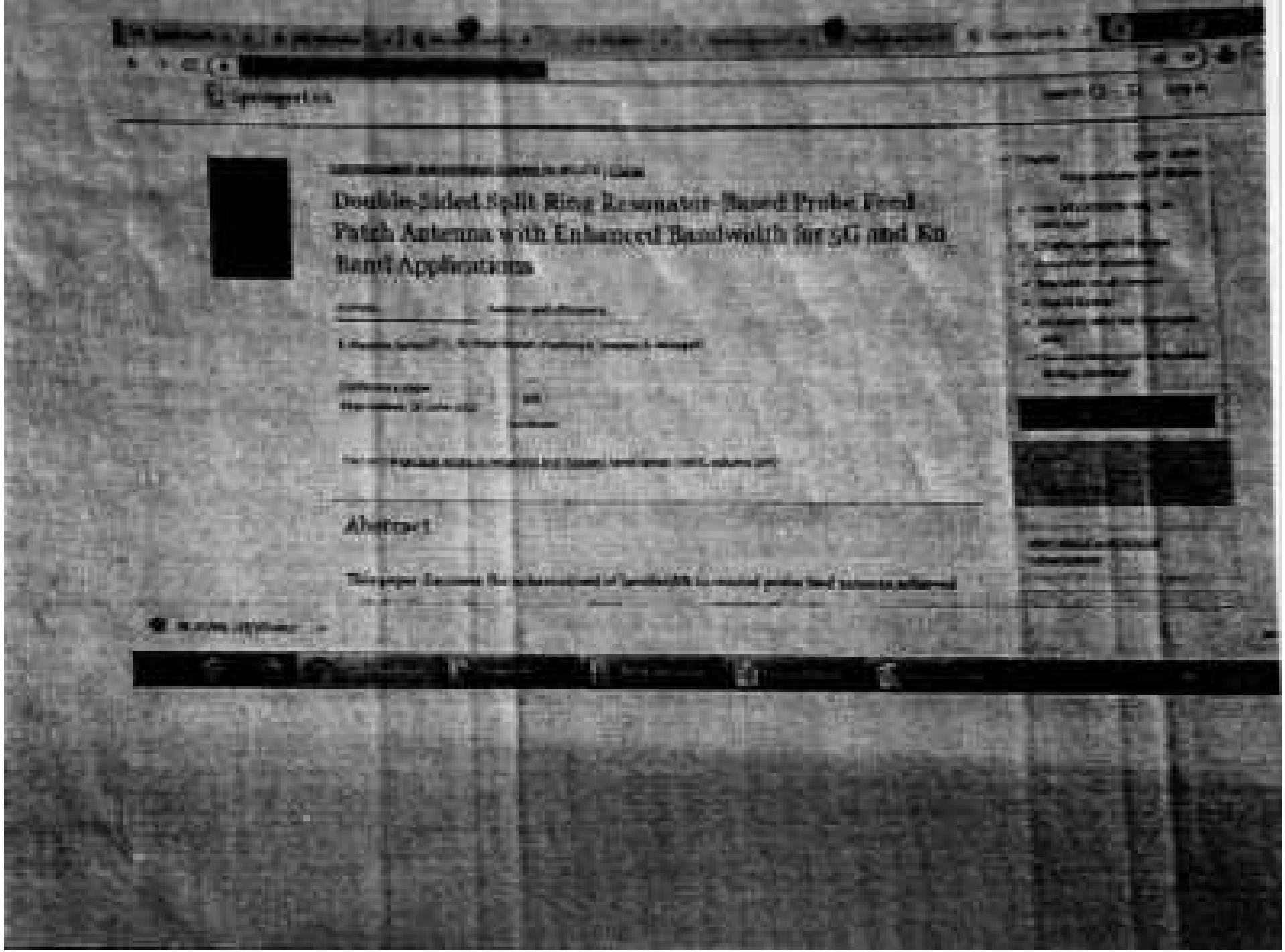

Double-Sided Split Ring Resonator-Based Probe Feed Patch Antenna with Enhanced Bandwidth for 5G and Ku Band Applications

Abstract

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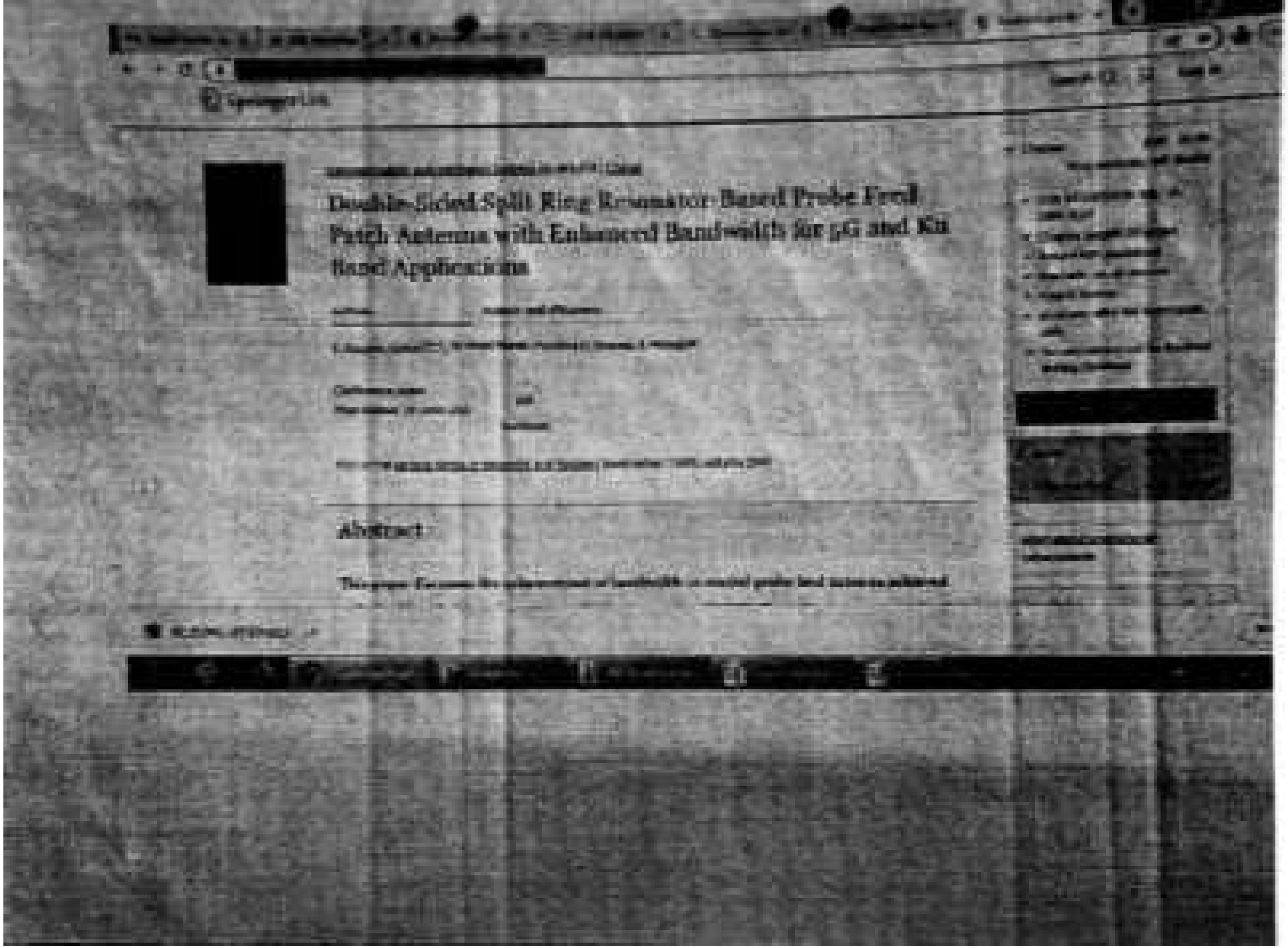

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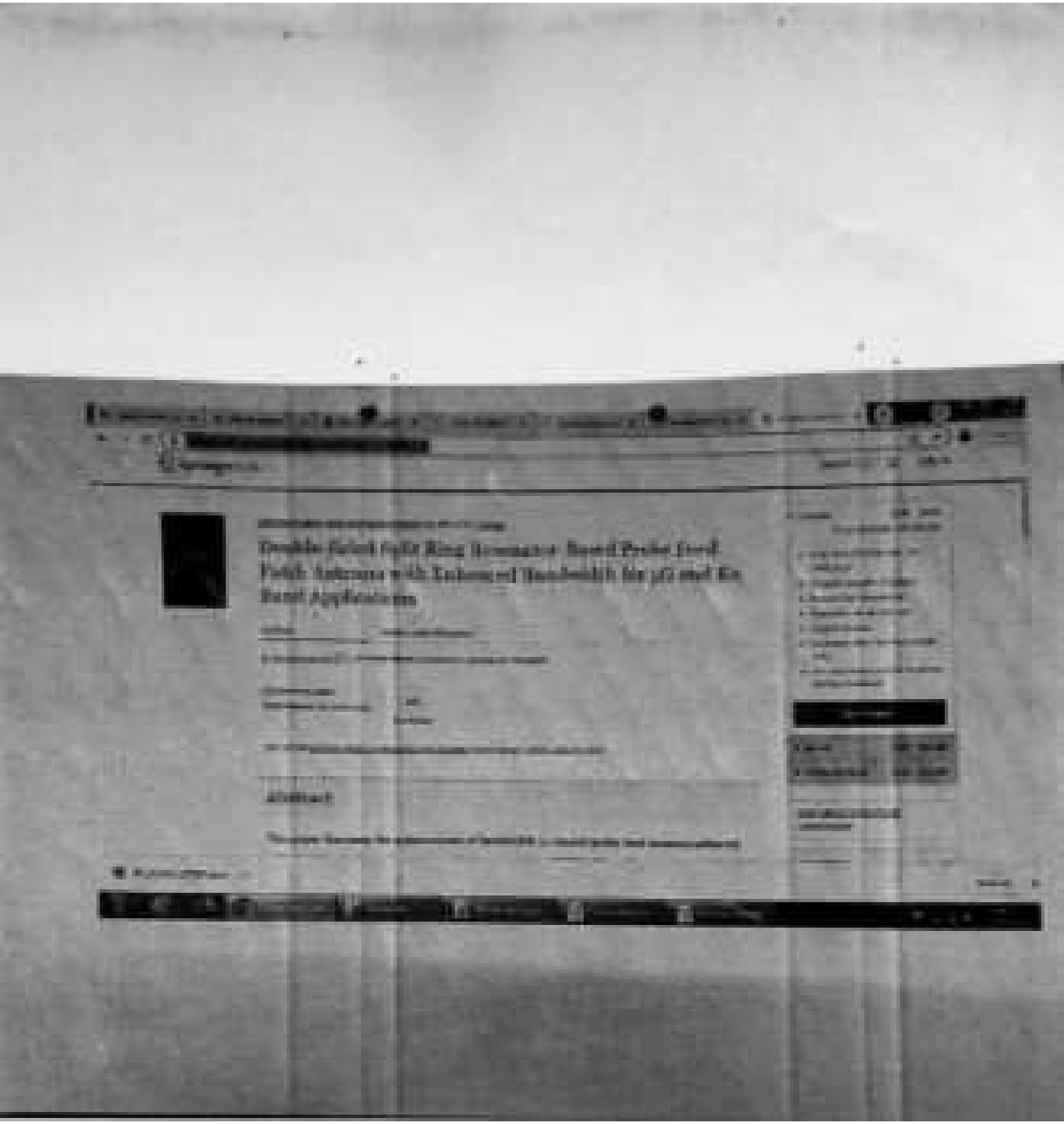

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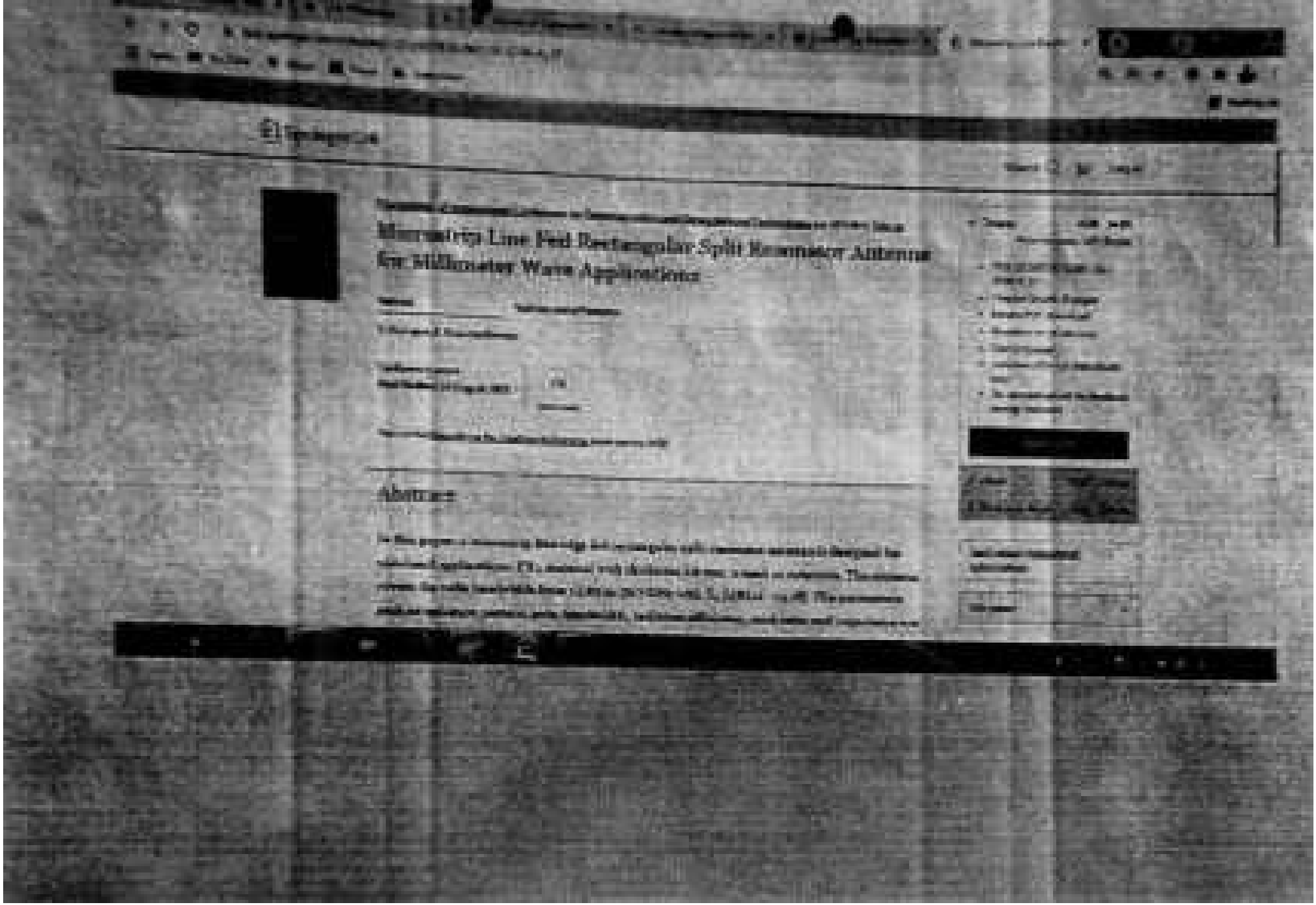

Microstrip Line Fed Rectangular Split Resonator Antenna for Millimeter Wave Applications

Abstract

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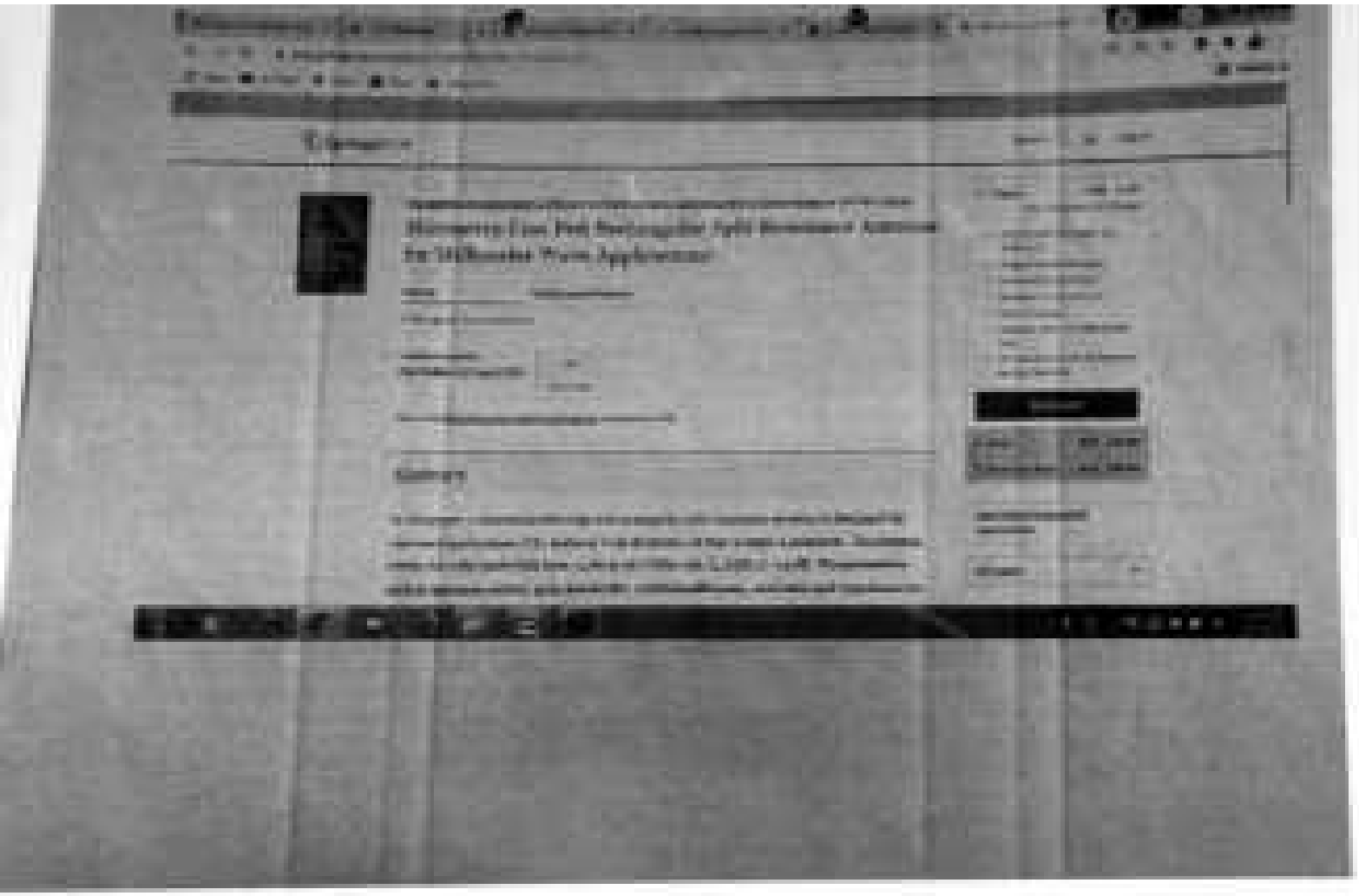

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Solution to Economic Load Dispatch using Ant Colony Search based-Teaching Learning Optimization

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Abstract— The primary objective of the paper is to minimize power production cost by optimal allocation of generators with an equal conversion of load demand using the proposed ant colony search based TLBO. The ant colony search based TLBO algorithm furnishes sophisticated harmony between exploration and exploitation. Undoubted load dispatch is a non-linear problem, to consider several imperative constraints and valve point loading are the reasons to avail the optimization techniques if the function is linear several iterative methods are available and for non-linear functions also possible to apply various techniques but the more drawback in the prevailing cost curve functions the curve shape is not fixed due to valve point loading. In this paper, the ant colony search based TLBO technique is proposed, and to test the stability of the proposed algorithm three different test cases are considered here:

i) The standard IEEE-30 bus system
ii) IEC-based Industrial Location
iii) Combined cycle Wind Power System

All these test cases have different numbers of generators as well as load centers. This is a multi-objective function and the proposed algorithm gives the optimal solution with very little time, very high convergence rate, and the number of algorithm variables is very less used in it.

Keywords: Ant Colony Search, Economic Load Dispatch (ELD), Equality Constraints, Evolutionary Algorithm, Inequality Constraints, Load Demand, Teacher-Learner Optimization

I. Introduction

In the real world, the electrical load demand is dynamic because the consumers use the electrical appliances according to their needs and needs. Not only residential consumers, the agricultural, commercial, and industrial loads are also varying the load demand according to seasonal conditions and product development respectively. All these need to welcome, the planning and scheduling of generators very crucial in power generation and management [1–3].

Economical load dispatch and unit commitment play a significant role in power generation. Mainly economic load dispatch is used to find the low-cost power production by optimal allocation of generators in the power plants. Economic load dispatch is a non-linear problem, various equality and inequality constraints are considered in terms of load demand, voltage, real & reactive power flows, shunt capacitances, and transformer tap settings [1]. Traditional linear programming is to fix the economic load dispatch problems due to its non-linear nature in the cost curve characteristics. The non-linear programming & quadratic programs are also addressed economic due to valve point loading, ramp rate limits are incorporated in the objective function. Various traditional optimization techniques are addressed the economic load dispatch problem and obtained fruitful results by satisfying all the constraints.

The valve point loading, ramp rate limits, and multi-fuel inputs are causes the cost curve to shape not in a regular manner and power more nature they conventional methods any given compromised solutions with constraints which are considered in economic load dispatch problems. For completing satisfactory results, the traditional optimization techniques are addressed the economic load dispatch problem and get satisfactory results. Initially, the many calculus techniques considered to solve the economic load dispatch problem like lambda method, gradient point method, gradient method, linear programming method[4] for these nature of the economic load dispatch. But due to the non-linearity all the above methods not reaching the best solution so it leads to numerical techniques quadratic programming and dynamic programming [5] to address the non-linearity. Future optimization techniques are used to solve the economic load dispatch problem to avoid the effect of non-linearity. Differential evaluation, genetic algorithm, evolutionary programming, simulated annealing, harmony search, artificial immune network, tabu search, ant colony

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Mathematical Modelling Of DVR with Two Stage Feedback Controller

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I. INTRODUCTION

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Control Of Generator And Load Side Converters For Stand-Alone Variable Speed Wind Turbine

[illegible]

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[illegible]

KEYWORDS: [illegible]

I. INTRODUCTION

[illegible]

II. SYSTEM DESCRIPTION

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Control Of Generator And Load Side Converters For Stand-Alone Variable Speed Wind Turbine

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Sri Vasavi Engineering College,
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Subrahmanyam Aditya Vikash
Department of Electrical & Electronics Engineering
Sri Vasavi Engineering College,
Tadepalligudem, Andhra Pradesh.

Abstract: Primary aim of the paper is to generate the quality of power from the renewable energy sources like wind systems is considered here to govern the system is operated in two mode conditions i) standalone mode ii) Grid connected mode. This paper explores the control of a standalone system using two different control schemes namely a generator side control scheme & load side control scheme. Which are helps to regulate output voltage levels and power delivered to load with any disturbances occur in the variations caused in the input side. The MATLAB platform is used for the testing control strategy.

KEYWORDS: synchronous generator, generator side controller, load side control, renewable energy, stand-alone, generator, wind system.

I. INTRODUCTION

The electric force generation using wind vitality source is accepting extensive consideration since it is unlimited, safe, non-accommodating and prepared for giving critical measure of capacity. Wind power age frameworks are developing quickly in sustainable power source applications [1][2]. Two sorts of wind generation turbines are available named as:1. Fixed speed wind turbine and 2 Variable speed wind turbine. The most widely recognized kind of wind turbine is the constant speed wind turbine with the induction generator straight forwardly associated with the grid. The reactive power and, therefore, the grid voltage must can't be controlled. The majority of the disadvantages of fixed wind turbines are shorted using those which variable-speed wind turbines are utilized. Variable-speed wind turbines have numerous favorable circumstances over fixed speed generator type are expanded energy catch, activity at greatest force point, upgraded proficiency, and power quality [3]. The stress levels are reduced by using variable wind turbines a below rated velocity of the wind, that is variable speed wind turbine power electronics converter a required which makes the variable speed operation conceivable. Essentially, a wind turbine can be outlined with a three-phase generator such as synchronous generator.

and asynchronous generator. The famous turbine grid the favored active vitality in the wind scrutinizing or any rate two cutting edges precisely coupled to an electrical generator which is used to achieve the mechanical force. The versatile idea of the blades and the change of handle position lead to fluctuating torques on the famous turbine generator. This causes variety in the shaft outrages and movement [5].

In Variable Speed wind frameworks, power gadgets controllers keep the rotor speed and the immunity movement connected to factor speed wind turbines mainly movement are influenced the rotor speed and it goes about as two. Hence it is clear that the rotor speed always depends on the variations of input power. The input power is slightly higher when it is compared with output power of the wind turbine and which gives the stability as well as delivered the power in soft manner to the grid system. The Drive nature of these forces vitality frameworks is greatly improved contrasted with fixed fixed speed partners. Variable wind speed turbines are operated in large wide speed range by maintaining the tip speed ratio optimum. The primary aim of these turbines, is captures the higher energy and the limitations only its control is complex in nature.

II. SYSTEM DESCRIPTION

The power delivered by the rotor is expressed as

$$P = 0.5\rho A C_p(\lambda,\beta)v = v_w r^2 = 0.5\rho\pi R^2 C_p \left(\frac{\omega_m R^3}{\lambda}\right)^3 \quad (1)$$

Where ρ is the thickness of air, v_w is speed of the wind in m/s, A is the swept area of the wind turbine blade, C_p is function of pitch angle & tip speed ratio. Tip speed ratio is expressed as

$$TSR = \lambda = \frac{\omega_m R}{v_w} \quad (2)$$

The optimal power output from the turbine is

$$P_{opt} = 0.5\rho\pi R^2 C_{p(opt)} \left(\frac{\omega_{opt} R^3}{\lambda_{opt}}\right)^3 = K_{opt}\omega_{opt}^3 \quad (3)$$

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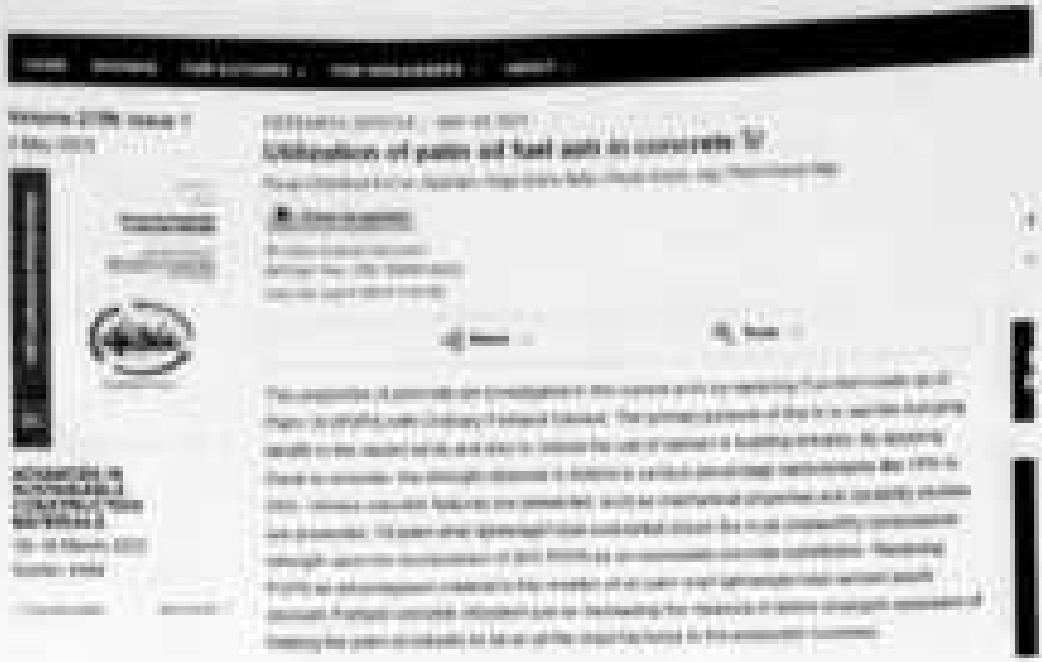

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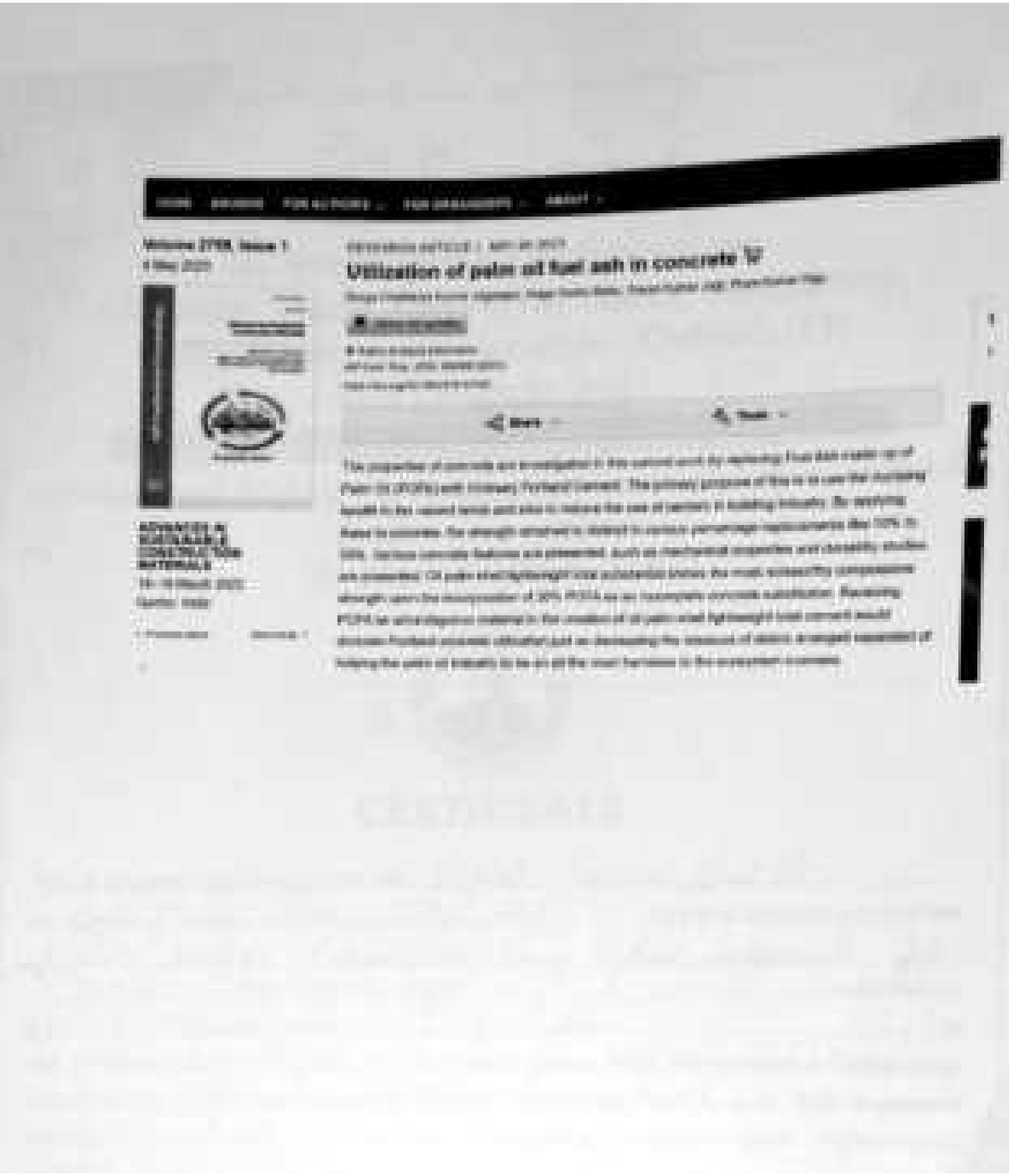

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Utilization of palm oil fuel ash in concrete

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The properties of concrete are investigated in this current work by replacing Fuel ash made up of (Palm Oil (POFA) with ordinary Portland cement. The primary purpose of this is to use the dumping landfill to the natural lands and also to reduce the use of cement in building industry. By applying these to concrete, the strength obtained is related to various percentage replacements like 10% to 30%. Various concrete features are presented, such as mechanical properties and durability studies are evaluated. Oil palm shell lightweight coal substantial shows the most noteworthy compressive strength upon the incorporation of 30% POFA as an incomplete concrete substitution. Replacing POFA be extra-ordinary material in the creation of oil palm shell lightweight total cement would decrease Portland concrete utilization just as decreasing the measure of waste arranged assessment of helping the palm oil industry to be an all the more harmless to the environment concrete.

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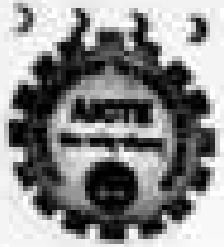

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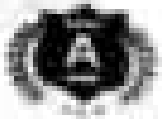

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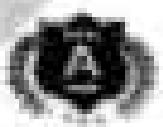

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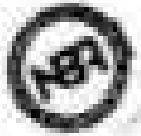

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of *SRI VASAVI ENGINEERING COLLEGE (AUTONOMOUS)*
presented/published a paper entitled *Emotional facial expression recognition using LBP,CNN and SVM Techniques*
in **AICTE** Sponsored International E-Conference on Emerging Trends in Engineering and Management (ICETEM-2020) held on 19th - 20th February, 2021.

Co-ordinator
Dr. V.S.Naresh
SVEC

Principal
Prof. G. VHSR Ratnakara Rao
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Secretary & Correspondent
Sri Ch.V.V. Subba Rao
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Pedatadepalli, Tadepalligudem - 534101, W.G.Dist, (A.P)

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Conceptual Glance of Genetic Algorithms in the Detection of Heart Diseases

Pagolu Bhavani Shankar and Yarlagadda Divya Vani

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Abstract :— **This paper presents the far reaching scrutiny of optimization algorithms in the capital of heart disease detection. An optimization algorithm has a gauge in diversified area of various problems. Swarm Optimization algorithms are the greatest reminiscence algorithms to several medical or therapeutic problems such as heart disease detection. By emerging swarm optimization algorithms for discovery of the complex medical diagnosis are easier in heart disease detection where expertise and knowledge up gradation is difficult in general manners. By addressing the swarm optimization algorithms, such as Artificial Bee Colony (ABC), Particle Swarm Optimization (PSO), Ant Colony Optimization (ACO) algorithms to a artificial neural networks, the detection of heart disease is definitely to accurate predictions. The database used for heart disease detection is Cleveland database data set from UCI (University of California Irvine) machine learning repository. Cleveland dataset contains 76 attributes, although a subset of 14 of them. CI are taken as input parameters and 1 attribute is a predicated output value. Based on the outcome predicted values of ABC, PSO and ACO algorithms, it is clear to see that the best stochastic and optimistic swarm intelligence algorithms.**

Keywords—Swarm Optimization, Artificial Bee Colony, Particle Swarm Optimization, Ant Colony Optimization, UCI, Cleveland database, Swarm Intelligence.

I. INTRODUCTION

Technology is a poisoned to the world. Technology has changes its value of wings as per the needs of society. Technology around the world as it acquires and it also give a various paths to the nature of living styles. Technology is stemma the world in all fields like engineering and medical. Technology plays a vital role to spectacle way to different medical problems. Heart Disease is the governing noncommunicable disease in present days. As per the census more people were chiefly attacked by various types of heart diseases. The cost of heart disease situations are increases by day by day.

Mental stress, physical stress like uncontrolled blood pressure, uncontrolled diabetic, uncontrolled cholesterol, uncontrolled weight, tobacco and alcohol consumptions are the serious or risk factors of several types of heart diseases. India is the diabetic capital of world. The life style of heart attack in India is at peak level comparatively with other one. 17.3 million Deaths were taken place due to heart disease in every year and it will be 23.6 million approximately at 2030 census [2].

II. LITERATURE REVIEW

Genetic and swarm optimization algorithms are the best stochastic algorithms and are having a wide range of variant applications in all fields. These ultimate stochastic algorithms were tested and applied in the era of medical diagnosis of heart disease. The working principles, applications and several studies of genetic algorithms were taken place to optimize a best solution to several problems [1]A Novel clustering approach : Artificial Bee Colony Optimization by Dervis Karaboga, Celal Ozturk, leads the application and strategies of ABC (Artificial Bee Colony) algorithm in a specified manner. [2]Heart Disease Detection by Enhancing the Training Phase of Neural Networks Using PSO (Particle Swarm Optimization) Algorithm by Pagolu Bhavani Shankar, elucidate the working principle of the PSO algorithm. [3]Heart Disease Detection by Enhancing the Training Phase of Neural Networks Using ACO Algorithm (Ant Colony Optimization) by Pagolu Bhavani Shankar, delineate the optimization process of ACO algorithm in brief. [4]A Comprehensive Review of Swarm Intelligence Algorithms in the Detection of Heart Disease by Pagolu Bhavani Shankar, intelligibly illustrates the comparative analysis of ABC and PSO algorithms.

III. GENETIC ALGORITHMS

Genetic Algorithm developed by John Holland in the year 1975. The main inspiration of the genetic algorithm is the evolution theory of Darwin's. Mostly, a genetic algorithm is an algorithm for clearing or solving an optimization problem in a generalized manner. Genetic algorithms or swarm optimization algorithms are the working and operating environment of Artificial Intelligence (AI). These are the collective and decentralized organized systems, interacting with one to another in their environments by complying with the nature and bio – inspired. Genetic and Swarm intelligence algorithms are the assemblage of nature and bio – inspired algorithms.

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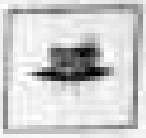

Certificate of Presentation

This is to certify that Mr. M CHILAKA RAO from Sri Vasavi Engineering college Tadepalligudem has presented a Research Paper Titled "Serverless Architecture Solution To Automate Educational Organizations" in Online International Conference on Recent Advances in Deep Learning (ICRADL-2021) Organized by the Department of Computer Science & Engineering, Shri Vishnu Engineering College for Women (Autonomous) during 29-31, January, 2021.

Convener	Co-Patron	Patron
Dr. P Rama Devi HOD-CSE	Dr. P. Srikanta Raju Vice-Principal	Dr. G. Srinivasa Rao Principal

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[redacted]

4

Tribocorrosion mechanisms in sliding contacts

M. Venkatesh[1], R. Sullivan[2], A.V. McAuto Rao[3] and A.V. Aditya[4]

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4.1 Introduction

Mechanisms involved in the degradation of materials under the combined effects of corrosion and wear have been an important area of research. This is primarily due to its immense potential importance in many engineering applications [1]. Classical electrochemical corrosion experiments such as open circuit potential, potentiodynamic polarization, and electrochemical impedance spectroscopy are typically carried out under static conditions [2]. Tribological performance of engineering materials tested using standard techniques can be broadly classified under two categories under lubricated and dry conditions [3]. While the above-mentioned tests offer in-depth information on the synchronous interplay of corrosion and wear behavior of materials individually, they lack a comprehensive understanding of phenomena occurring on the surface when rubbing and corrosive conditions exist simultaneously. The study and understanding of tribocorrosion mechanisms have been challenging due to two reasons: first, the difficulty in developing test methods that can closely replicate the actual application conditions and second, the

[redacted]

difficulty in isolating and identifying the mechanisms that take place due to the simultaneous action of wear and corrosion. Research directed toward understanding these two aspects have caused considerable advancement of the understanding of mechanisms in tribocorrosion during sliding. This chapter is an attempt to summarize these developments and afford the reader a broad review of the mechanisms in tribocorrosion under sliding. Since the operative mechanisms are strongly dependent on materials selection and processing, the chapter is laid out discussing the mechanisms in the same order and concludes with a summary and future scope. Broadly, the mechanisms that are operative in the surface degradation of metallic alloys during sliding follow a sequence in the order of surface passive layer breakdown under mechanical (sliding, rigid abrasive nature of the passive unprotected surface under the combined action of sliding and corrosive media attack, and reconstruction of the surface when sliding ceases. This cycle may be interspersed by phenomena such as rubbing-induced secondary phase formation, development of intermediate compounds (these may grow and break down and in some cases balance rate of these kinetics exists and so on. These phenomena are reported in the literature are summarized and discussed here with.

Among the most frequently studied materials for corrosion and wear and for tribocorrosion [redacted] stainless steel

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Electromagnetic Braking System Fabrication With Chain Drive System

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...omagnetic Braking System uses the Magnetic Force ...e the power required for the braking is manually ...ed. A shaft is fastened to the disk and an ...ngnet is mounted on the frame. Due to the current ...through the coil, as electricity is being applied to the ...magnetic force is formed over the armature which ...e armature to be drawn to the coil. As a consequence, ...grows and gradually the vehicle comes to rest. The ...of using an electromagnetic braking system in the car ...ject in this project. It is possible to add these as ...al auxiliary brakes in heavy vehicles. Electromagnetic ...should be used as auxiliary brakes in commercial ...By regulating the supply current to create the ...r flux, electromagnetic brakes can be used by ...cial vehicles. It could be used in cars in the future as ...y changes to the brakes.

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I. INTRODUCTION

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II. CHARACTERISTICS OF ELECTROMAGNETIC BRAKES

...agnetic brakes have also been found to produce a ...e force that is almost twice the maximum power output ...ventional engine and at least three times the stopping ...of an exhaust brake.Such electromagnetic brakes ...ly makes them a much more attractive candidate ...al to other retarders drawbacks regarding ...ss. Before requiring repairs, the brake linings would ...th longer, and the possible "brake fade" issue could be ...d. It was shown in research conducted by a truck ...ufacturing company that the electromagnetic brake ...d 80% of the duty of the regular service brake that ...ehicle have been requested.

In addition, the electromagnetic brake avoids the dangers that may occur beyond its capacity to dissipate heat from the repeated use of brakes.It is more likely that this would happen at high speeds when a vehicle is descending a long gradient. Electromagnetic brakes are electrically functioning, but mechanically inactive torque. Owing to this, they used to be referred to as electromechanical braking. EM brakes have been known as electromagnetic over the years, referring to the diversity of uses and breakthroughs, but the underlying operation remains the same.

Electromagnetic single-face shoe drum brakes are of all basic applications that apply power. These brakes are mainly concentrated in this article. At the end of this article, alternate designs are shown. In addition to the standard friction brakes on heavy vehicles, electromagnetic brakes have been used as supplementary retardation devices. In this section, we outline the basic concepts of normal brakes and some alternative strategies for retardation. The operating theory and features of electromagnetic braking are then assessed.

A. Electromagnetism

One of the four basic interactions in nature is electromagnetism. The other three are the good relationship, the weak relationship and gravitation. The force that induces the interaction between electrically charged particles is electromagnetism, the areas in which this occurs are called electromagnetic fields.

Fig. 1. Electromagnetic field

B. Types of Electromagnetic brakes

1) When electrical power is either inadvertently lost or purposely disconnected, power-off brakes step or hold aloof. Some firms have referred to these as "fail safe"brakes in the past. Usually, these brakes are used on command as electric motor. Popular applications includerobotics, retaining brakes for Z-axis ball screws and servomotor brakes. Brakes are available at different voltage

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In addition, the electromagnetic brake avoids the dangers that may occur beyond its capacity to dissipate heat from the repeated use of brakes.It is most likely that this would happen at high speeds when a vehicle is descending a long gradient. Electromagnetic brakes are electrically functioning, but mechanically needle torque. Owing to this, they tend to be referred to as electromechanical braking. EM brakes have been known as electromagnetwithout the years, offering an ...hgeometry of cast and brakelinings, but the underlying ...operation remains the same.

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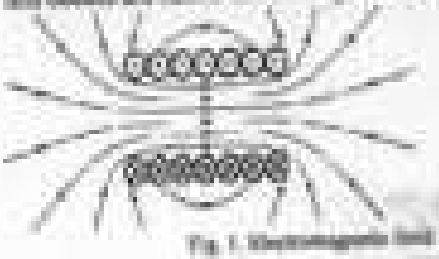

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DEVELOPMENT OF HYDROXY GENERATOR FOR GENERATION OF ECOFRIENDLY HHO GAS AND ANALYSIS OF ENGINE PERFORMANCE WITH HHO GAS AS SUPPLEMENT

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Abstract – This paper deals with the production of HHO gas and thus use the hydrogen liberated from it as a additional to increase fuel efficiency in IC engines. The combustion method in IC engines is inevitably primitive and thus exhaust fuel remains when the combustion ambient. This is a awfully difficult downside being faced by today's industry as this unburnt mixture may be a serious air waste. HHO generator may be a terribly economical approach to extend the fuel potency by increasing the energy created per mole of fuel throughout the combustion ambient. As a result the quantity of unburnt fuel within the combustion chamber was reduced. The predictable approach relies on a standard HHO generator. Though individuals use HHO generators in below a awfully very little analysis has been distributed in implementing associate in economic system. This paper is merely focused on drawing a comparison between the various characteristics of IC engine when run with Petrol and Petrol with HHO as employment and detailing the latter system.

Keywords: Performance, SI Engine, HHO Gas, Petrol

I. INTRODUCTION

The most economical element fuel of the advanced days today is chemical element. It has almost the same calorific value as the petrol. Hydrogen is wide plentiful around us within the diversity of water. If we can find an efficient and apt process to extract it from water we get ourselves a Whereas extraction of hydrogen from water is the best way because it produces a mixture of hydrogen and oxygen also named as 'oxyhydrogen' or 'Brown's Gas'. This is a highly combustible mixture Which has more calorific value than hydrogen molecule. Clean energy source as the byproduct of Hydrogen burn is water again.

Atomic Hydrogen	
Atomic Number	: 1
Appearance	: Colorless
Phase(at STP)	: Gas
Density(at STP)	: 0.08988 g/L
Thermal Conductivity	: 0.1805 W/mK
Molar Heat Capacity	: 28.836 J/(mol·K)
Heat of Vaporization	: 0.904 kJ/mol
Net Calorific Value	: 120,000 kJ/kg

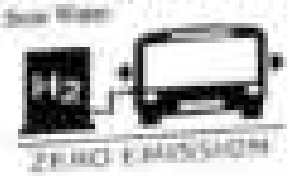

Fig. 1 Hydrogen

There are many sources from which Hydrogen can be extracted. It can be taken out from Acetylene or from Water.

A. Extraction of hydrogen

Hydrogen itself built of any ore. A mix of H and O is needed for it to obtain in fuel. Extraction of Hydrogen from Acetylene requires chemical processes and is more costly. So Hydrogen is favored in this development.

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DEVELOPMENT OF HYDROXY GENERATOR FOR GENERATION OF ECOFRIENDLY HHO GAS AND ANALYSIS OF ENGINE PERFORMANCE WITH HHO GAS AS SUPPLEMENT

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Abstract – This paper deals with the production of HHO gas and then use the hydrogen liberated from it as a supplement to increase fuel efficiency in IC engines. The combustion method in IC engines is incredibly primitive and thus exhaust fuel remains when the combustion method. This is a awfully difficult downside being faced by today's industry as this unburnt mixture may be a culprit air waste. HHO generator may be a terribly economical approach to extend the fuel potency by lowering the energy created per mole of fuel throughout the combustion method. As a result the quantity of unburnt fuel within the combustion chamber was reduced. The predictable approach relies on a standard HHO generator. Though individuals use HHO generators to follow a awfully very little analysis has been distributed in engineering associate in economic system. This paper is mainly focused on drawing a comparison between the various characteristics of IC engine when run with Petrol and Petrol with HHO as supplement and deciding the better system.

Keywords: Performance; SI Engine; HHO Gas; Petrol.

I. INTRODUCTION

The most economical alternate fuel of the advanced days fusing is chemical element. It has almost the same calorific value as the petrol. Hydrogen is wide plethoric around us within the diversity of water. If we can find an efficient and apt process to extract it from water we get ourselves a Whereas extraction of Hydrogen from water is the best way because it produces a residue of hydrogen and oxygen also called as "oxyhydrogen" or "Brown's Gas". This is a highly combustible mixture which has more calorific valuation than hydrogen molecule. Close energy source as the byproduct of Hydrogen burn is water again.

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Fig. 1 Hydrogen

A. Extraction of Hydrogen

Hydrogen itself isn't of any use. A mix of H and O is needed for it to character as fuel.Extraction of Hydrogen from Acetylene requires chemical processes and is more costly. So Hydrogen is formed in this development.

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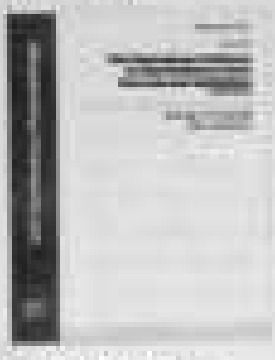

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Bhopal, India

Experimental investigation on mechanical, wear and corrosive properties of Aa6061-Tib2 in-situ composites produced by K2tif6-Kbf4 reaction system at optimum holding time

S. Vijaykumar ✉ · S. V. Prasad

Aluminium based matrix composites with TiB2 ceramic reinforcements are extensively used in all spheres, achievable, some new applications due to their low weight to strength ratio, better corrosive properties, excellent wear resistant properties. In-situ composites are manufactured under four reaction synthesis at cheapest route to fabricate and uniform distribution of ceramic particles. AA6061 is chemically mixed with molar ratio 3K2TiF6 and 6KBF4 to form TiB2 in aluminium matrix because of exothermic reaction fine particles of TiB2 present are formed at a optimum holding time (1hour) of molten composite. Composite is prepared with different weight fractions like 2%,4.5%,6%,7.5% TiB2 in aluminium matrix. The TiB2 reinforcement and distribution are examined using SEM, XRD, EDAX analysis. Mechanical, Wear properties are studied and analyzed at different reinforcement of TiB2 Particulates. As increasing TiB2 content improves ultimate tensile strength, hardness, and wear resistance with decreasing ductility.

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A Compact Multiband CPW fed Micro strip Fractal antenna for X band & Ku Band Satellite Communication applications

K. Kumma Kumari , Purnima K. Sharma, S. Murugan, D. Rama Devi
1,2,3, ECE Department, Sri Vasavi Engineering College
4, ECE Department, Sreyas Engineering College

Abstract: The main objective of this paper is to design a compact multiband antenna using the fractal geometry in three iterations which is fed by Coplanar Waveguide Feeding technique. It is resonating at Four different frequencies 12.29GHz, 13.8 GHz,15.16 GHz and 18.22 GHz and the bandwidths obtained for this Quad band antenna are 340MHz, 690 MHz, 440 MHz, 1710 MHz respectively. In each iteration the performance analysis of the antenna was carried out in terms of return loss, Gain, Bandwidth, Radiation efficiency and comparison of four structures has been done . The proposed antenna consists of rectangular patch with the dimensions of 20mm x 13.8 mm and it was implemented on the substrate FR4 with the size of 23.15mm x 27.15mm x 1.6mm. Reactive loading technique was implemented in each iteration to achieve the multiband operation and hence miniaturization of the antenna size was also achieved with the proposed antenna design without much more compromising in radiation efficiency . Size reduction , multiband function and radiation efficiency combined together realizes a compact and practical antenna used for X band and Ku band Satellite Communication applications.

Keywords: Multi band, Fractal antenna, Reactive Loading, CPW feed, Radiation Efficiency, Satellite Communication

I. INTRODUCTION

Wireless communication has been evolving since the birth of radio wave. Recently the demand of Ultra wideband, multiband, miniaturization of antennas growing rapidly with the satellite and radar communication which become a common practice all around the world. Antenna is essential component for all wireless communication devices. It has the ability to provide a means of radiating or receiving wave signal into open free space from one place to other. Fast growing trends of wireless communications have spurred increasing possibility of including various service applications[1], with different frequency bands, in the same device; and also demand a compact antenna design for the integrated device. This has put tremendous inspiration for antenna engineers to develop miniature[7] printed antennas which can support different communication specifications. As the technology advances every year, demand for low cost, low volume, low profile, planar configuration, and ultra wideband multi frequency planar antennas has been increased, so more research work is going on compact microstrip patch antennas because it satisfies all the requirements because of its low profile, low cost and printable circuit technology.

In satellite communications, for radio waves and radar engineering, the IEEE Standard defines the microwave frequency bands X band and Ku Band with frequency ranges from 8.0 to 12.0 GHz and 12.0 to 18.0 GHz respectively[1]. Nearly all C-band communication satellites use the band of frequencies from 3.7 to 4.2GHz for their downlinks and the band of frequencies from 5.925 GHz to 6.425 GHz for their uplinks. For short range tracking, marine radar airborne intercept and missile guidance the X band is used[4,5,6]. Especially it is used for radar communication ranges roughly from 8.29 GHz to 11.4 GHz. The Ku band is used for high resolution mapping and satellite altimetry. Especially, Ku band is used for tracking the satellite within the ranges roughly from 12.87 GHz to 14.43 GHz.

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A Compact Multiband CPW fed Micro strip Fractal antenna for X band & Ku Band Satellite Communication applications

K. Kumara Kuruvi, Purushot K. Sharma, S. Murugan, G. Rajesh Dhruv
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S.E.T. ECE Department, SRVEW Engineering College

Abstract: The main objective of this paper is to design a compact multiband antenna using the fractal geometry in three iterations which is fed by Coplanar Waveguide Feeding technique. It is resonating at Four different frequencies 11.2931Hz, 13.8 GHz,15.16 GHz and 18.22 GHz and the bandwidths obtained for this Quad band antenna are 340MHz, 690 MHz, 440 MHz, 1710 MHz respectively. In each iteration the performance analysis of the antenna was carried out in terms of return Loss, Gain, Bandwidth, Radiation efficiency and comparison of four structures has been done . The proposed antenna consists of rectangular patch with the dimensions of 28mm x 13.8 mm and it was implemented on the substrate FR4 with the size of 37.18mm x 37.18mm, 1.6mm. Reactive loading technique was implemented in each iteration to achieve the multiband operation and hence miniaturization of the antenna size was also achieved with the proposed antenna design without much more compromising on radiation efficiency . Size reduction , multiband function and radiation efficiency combined together realizes a compact and practical antenna used for X band and Ku band Satellite Communication applications.

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Special Session on 5G Antennas : Design Challenges, Applications

A Compact Multiband CPW fed Micro strip Fractal antenna for X band & Ku Band Satellite Communication applications

S. Kowsiny Kumari , Purnima S. Sharma, S. Murugan, D. Rawat Dave
1,2,3. ECE Department, Sri Vasavi Engineering College
4. ECE Department, MVGR Engineering College

Abstract: The main objective of this paper is to design a compact multiband antenna using the fractal geometry in Koch iterations which is fed by Coplanar Waveguide Feeding technique. It is resonating at four different frequencies 12.25GHz, 13.8 GHz,15.36 GHz and 18.22 GHz and the bandwidths obtained for this Quad band antenna are 340MHz, 690 MHz, 440 MHz, 1710 MHz respectively. In each iteration the performance analysis of the antenna was carried out in terms of return loss, Gain, Bandwidth, Radiation efficiency and comparison of four structures has been done . The proposed antenna consists of rectangular patch with the dimensions of 20mm x 11.8 mm and it was implemented on the substrate FR4 with the size of 27.15mm x 27.15mmx 1.6mm. Reactive loading technique was implemented in each iteration to achieve the multiband operation and hence miniaturization of the antenna size was also achieved with the proposed antenna design without much more compromising its radiation efficiency . Size reduction , multiband function and radiation efficiency combined together realizes a compact and practical antenna used for X band and Ku band Satellite Communication applications.

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Abstract

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Design Of Cylindrical Ring Dielectric Resonating Antenna For X Band Applications

[redacted]

Abstract— This paper deals the Design of cylinder ring dielectric resonating antenna for X band application. ALSiO (Cylinder and Rogers RT /duroid5880 tm10.2(Ghz) material had been used for the design of the Aerial. The lowest return loss had observed in the ALSiO Ceramic material i.e. -23dB. It was observed that the resonance frequencies at 9999MHZ and 9999MHZ. It was found that the maximum Gain is 6dB with ALSiO Ceramic material. The entire simulation had done in HFSS software.

KEYWORDS: ALSiO (Ceramic/Rogers RT /duroid5880,Dielectric resonator,HFSS

I.INTRODUCTION

A Microstrip antenna consistsns of very thin metallic parts placed on conducting ground plane, separated by a dielectric substrate [1]. A patch antenna consists of a radiating patch on one side of a dielectric material substrate and ground plane on other side as in. Microstrip antennas are very popular and this preferred due to their numerous advantages such as light weight, low profile. There are very versatile when comes with a particular patch shape in terms of polarizations, patterns and resonant frequency [2]

II.FEEDING TECHNIQUES

In telecommunications and electronics, an aerial feed refers to the components of an antenna which feed the radio waves, convert them to electric components and transmit them to the receiver [3]. Microstrip patch antenna can be fed by a variety of methods.

1. Microstrip line feeding
2. Coaxial feeding
3. Aperture Coupled feeding
4. Coplanar Wave Guide feeding

The performance of the antenna of patch antenna depends on shape and size of ground plane as well as shape of feeding technique. One major limitation of the patch antenna is its narrow bandwidth characteristics. To achieve wide bandwidth and dual band characteristics use Coplanar Waveguide (CPW) feeding and Defected Ground Structure (DGS) [4]

Figure 1: Coplanar Feed Structure

Figure 1 shows, coplanar waveguide consists of a conductor strip in the middle and two ground planes are located on either sides of center conductor. All these lie on the same plane [5]. The effective dielectric constant of CPW is same as of slot line. The characteristics impedance of a coplanar waveguide is not affected by thickness and depends on width (W) and space (S).

III.DESIGNING

The below figure 2 shows the basic view of the designed antenna with the dimensions of the Outer Radius is 15, Inner Radius is 4.5, Height is 21 and Ground Plane is 40x40x1.6.

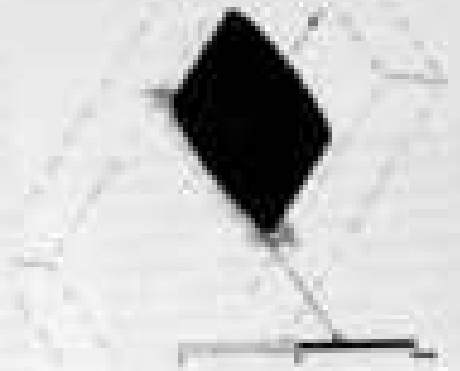

Fig 2: 3D Model for cylindrical ring DRA (Diagonal view)

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Design Of Cuboidal Dielectric Resonating Antenna For X Band Applications

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INTRODUCTION

[illegible]

[illegible]

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PARAMETRIC ANALYSIS

The following are the parameters which influences the parameters analysis for hemisphere DRA:

- Length
- Width
- Height
- Ground Plane

[illegible]

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Design Of Cuboidal Dielectric Resonating Antenna For X Band Applications

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Department Of ECE
Sir Vasavi Engineering College
Andhra Pradesh,INDIA

Abstract— In this paper, the Dielectric Resonator Antenna(DRA) is designed and fabricated using K-LOS CERAMIC material and studied at various frequencies. The DRA antenna is designed by using HIGH FREQUENCY STRUCTURE SIMULATOR software. It is one of the tools used for antenna designing in a straightforward manner. In this design, aperture coupled feed technique is used to describe the characteristics of the antenna. The design uses cuboidal dielectric DRA mounted on ALSIC substrate material. The DRA is fed by coaxial and microstrip line feed.

Keywords- DRA, Cuboidal structure, coaxial feed.

INTRODUCTION

Antennas plays a vital role in the communication field. An Antenna is a device used to radiate electromagnetic energy into the space efficiently in the specified directions. Antennas acts as a path between the space and electromagnetic energy. The direction for the signal can be specified by the antenna in many applications. Many antennas are used for different applications based on the frequency band i.e., if an antenna designed for specific application with specific frequency band is used only for that application. Beyond that frequency the antenna rejects the signal. In these sense that antenna is said to be a band pass filter.

There are many antennas used for microwave frequency applications which uses different methods for designing and implementation. One of the microwave frequency applications is DRA i.e., DIELECTRIC RESONATOR ANTENNA. In this DRA, it consists of a block of ceramic material of various shapes, the dielectric resonators, mounted on a metal surface, a ground plane. The main advantages of this type of antennas are low cost, small size and can be easily solved. The main drawback of these antennas are reduced radiation efficiency and narrow impedance bandwidth which are very important parameters in the antenna designing areas. Though it uses the advanced designing solutions based on dielectric superstrates or loading structures but the reasons is the effect of lossy silicon substrate materials. The antenna must satisfy all the parameters while designing and the most useful point in this design is that the dielectric resonator (DRA) will allow the radiation signals at high frequencies mainly in the millimeter range and beyond. The main fact is that DRA doesn't have conduction losses and it can work efficiently with high radiation when it is fed properly. The shape of the DRA can be in various forms like cylindrical, disk, rectangular, spherical, half-split cylindrical, disk, hemispherical, and triangular shapes which can be used various applications.

The physical view of a CUBOIDAL DRA consists of three edges. On comparing these edges, the second and third edges are equal in lengths. The first edge is having smallest edge and first and second surfaces of the cuboid is formed by first edge. The main part of the first surface is the transmitting. The second surface is mounted on the ground board. The conducting material is coated on the first and second surfaces.

PARAMETRIC ANALYSIS

The following are the parameters which influences the parametric analysis for rectangular DRA:

- Length
- Width
- Height
- Ground Plane

plays a key role in antenna designing. First step is of selecting the dimensional values for the antenna to be designed. In most common conditions some parameters like material properties, source excitations, boundaries, shapes remain unchanged. Some parameters like Voltage standing wave ratio(VSWR), S-parameter, gain, radiation efficiency varies based on the dimensions. So it is very important to be accurate in the dimensions.

The operation in the DRA is that radio waves are injected into the resonating material from the transmitter and they bounce back between the resonator walls which forms standing waves. These walls are partially transparent which is used to for radio power to radiate into space. One

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RT-Gate: Concept of Micro Level Polarization in QCA

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ABSTRACT

QCA (Quantum-dot Cellular Automata) is the transistor less evaluation paradigm and viable candidate for replacing the CMOS based technology. QCA is one of the boosting nanotechnology devices with the aim to replace the CMOS technology. QCA is implemented by utilizing the tunneling of the electrons with the given potential within the quantum cell. We suggested a multiplexer architecture in QCA using micro-level polarizations in this paper. The proposed multiplexer design reveal 84.8% of effective area compared to the best designs reported so far. In this work, a new design of universal gates is proposed. The new design of three NOR and NAND gates required less number of cells and area compared to the conventional majority gate based designs. By using these universal proposed gates, the multiplexer which is proposed in this paper is implemented. The multiplexer is implemented and its functionality is verified by QCA Designer © 2005 Version 2.0.3.

KEYWORDS

Quantum-dot Cellular Automata (QCA), RT-Gate (Rotate 0 Gate), 2x1Multiplexer, Universal gates, Operation cost (0 Gate), Area Utilization factor (AUF).

I. INTRODUCTION

Quantum-dot Cellular Automata is a proposed improvement on CMOS technology. Moore's law stated that the count of transistors present in an integrated circuit doubles about every eighteen months. But in the recent era, the size of the MOSFET is very minute. To satisfy the Moore's law, the size of the MOSFET must be very much shortened by reducing the length of its channel. By reducing the length of MOSFET's channel beyond certain limits, short channel effects come in existence. There comes the QCA technology which gives transistor less designs. The area, speed and power consumption of QCA devices are upgraded beyond the technologies of semiconductor like CMOS to overcome the short channel effects. In Fig.1, the coulombic repulsion term indicates the interaction between the two neighbor cells in QCA. Based on the adjacent cell's electron repulsions, the positions of electrons will be set in the quantum cells. This way, the message will be transformed from input side to output side. The different combinations of the quantum cells give rise to different devices.

In QCA technology, the wire is in the form of an array, a sequence of quantum cells. There are four corners of each quantum cell that contain four quantum dots. The electrons will occupy diagonal positions due to the Coulomb repulsive force. These states are identified with respect to the polarization corresponding to the electrons placed on the square diagonals. The polarization P= +1 is defined when one of the electrons is positioned at left lower and the other electron is positioned at the right upper. In opposite case, it is defined as P=-1. These representations are shown in Fig.1. Polarization of a quantum cell is given by P= ((P1+P3)-(P2+P4))/ (P1+P2+P3+P4) (1). If two electrons reside in the opposite quantum dots of a quantum cell, then the polarizations were which defines logic 1 and logic 0. According to this, in Fig. 2, the first quantum cell polarization is P=-1 and P=+1 for the second quantum cell. In this paper, new designs of universal gates are proposed by changing the fixed polarization levels. The basic gates and the existing T-gate structure are discussed in the subsequent sections. The proposed universal gate structure and the multiplexer implementation are discussed in section 4 followed by the conclusion in section 5.

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Implementation of ANN Trained Voltage Control Scheme for Grid Islanded DG System

[redacted]

Abstract. Distributed generation plays a significant role in power generation, but the standalone system has some limitations like excess power generation and sudden increment in load. Grid interconnected DG system mitigates all this type of problems but some different problems arise in this interconnection. How to synchronize the DG system with the grid? If any change in voltage or frequency they lead to disconnect the grid from DG system. Due due to sudden loses of grid supply, the phase angle is changed in DG terminal voltage and leads some change in load voltage because when the grid is connected the load receives power from both DG and grid. In grid-connected system current controller is generally used, to maintain the constant current in load side, so in islanding conditions, the voltage profile will get damage and power factor is also dropped. This paper proposes a strategy of two controllers for both grid-connected and islanded islanding modes. PI controller based constant current regulator for grid connected mode, while ANN based VC controller for islanded islanding mode. These two controllers are operated according to changes occurred at Point of Common Coupling (PCC).

Keywords: *ANN Based PC Controller, Current Controller, Distributed Generation, Intentional Islanding, Grid-Connected DG System, Point of Common Coupling*

1. Introduction

The DG is very useful in the case of "blackout", due to different reasons like voltage, frequency droppages. The DG is defined as the generation centre is located at the load centres for power supplies. Generally, buildings are the one example the top of the buildings PV panels are panels are placed the generated power is utilized by the consumers on the building. The excess power is connected to the grid. The anti-islanding circuits are provided for the continuous operation. In the perspectives, intentional islanding is done for the constant voltage maintenances in the load centre. The intentional islanding tool is very useful for DG system because the grid line is suddenly cut-off from the tie-line (P.C.C.). The most effective advantage of the PV connected grid systems increases the effective utilization of power because the storage system is not required when there are no storage issues. A standalone system is not suitable for dynamic load changes so it needs without any fluctuations in output response to overcome option is connecting a battery system to solar system but it is very costlier, so if the right conditions are possible the distributed generation system is connected to grid in the near

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Optimal Solution of Economic Load Dispatch using Teaching Learning Algorithm

[redacted]

ABSTRACT:

[redacted]

I. INTRODUCTION

[redacted]

II. PROBLEM DEFINITION

[redacted]

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Chapter - 2
ANFIS and SCLEIC Based Battery Charging Controllers for PHEV

Author(s)

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COMPARATIVE STUDIES ON TERNARY BLENDED CONCRETE

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Abstract—Now a days concrete is the most commonly used material in the construction. This paper suggests ternary blended concrete and results of an experimental investigation on concrete properties. By the addition of rice husk ash, slag sand fly ash with the partial replacement of cement .The properties that are going to be investigate are workability and compressive strength. This paper discuss about the percentage to be added to get high strength and good workability. Cement replaced with rice husk ash,slag sand fly ash of different proportions.

Keywords—Conventional concrete, GGBS, fly ash, compressive strength, workability, durability.

I.INTRODUCTION

Economic and Environmental considerations play a major role in utilizing industrial wastes like GGBS and Fly ash as a replacement of cement in making of concrete. As concrete is the second most consumed material in the world after water. There are so many surveys saying that if the concrete is prepared with the materials which occur naturally like river sand, before that are going to be exhaust in future. Considering that this paper suggests not only utilizing other materials for concrete production but also minimizing the waste generated by industries and with addition to that the concrete properties can be improved by using these industrial wastes. In this an experiment is carried out to calculate strength and behavior of concrete. The fly ash is having pozzolanic properties is already in use and so many researchers are on it.

II.OBJECTIVE

The main objective is to utilize the industrial waste like GGBS, and fly ash in making concrete not only considering about economy but also considering environment. The fly ash is already used because of its pozzolanic nature. Here it is blended with GGBS to improve properties of concrete.

III.SCOPE OF WORK

The title itself says the concrete is going to made with granite powder and fly ash, which are valuable wastes released by thermal and polishing industries which release them in a huge quantity .These are very fine and are airborne, this means these are easily carried out by wind. These particles are also going to adverse effects on human beings who inhale them as these are airborne. These are going to becoming problems to those who subjected in that pollutant environment.

Concrete made with GGBS and fly ash will be the key to decline these wastes in the environment. The concrete also utilized these wastes without going to create any problems to human health after the usage there in the raw materials.

IV.LITERATURE REVIEW

[1] Ternary blended cement system of OPC+ FA+SF compressive a better choice than binary blended cement system of OPC+SF as get strength comparable to normal also due to its economic and environmental Benefits.[2] Based on the result a 16% FA and 4% CFA combination is better proposed as optimum for 30% Replacement of OPC a concrete matrix, since at this combination only 1.4% reduction in the compressive strength of OPC+FA+CFA concrete was observed when compared with the controlled concrete.[3] Effect of Granite Powder on Strength Properties of Concrete "advised that the water absorption drops to about 8% than conventional concrete and the all strength characteristics are increased. Sanjay and anshu[4]the percentage increase in Compressive Strength of Ternary Blended Concrete is found to be higher at higher ages for all water to binder ratios.[5]Fabricated concrete is obtained upto 30% replacement of granite powder, beyond that the concrete has poor abrasive nature.

V.METHODOLOGY

1. Materials required
2. Concrete mix design
3. Fresh properties of concrete
4. Hardened properties of concrete
5. Comparing and plotting graphs
6. Conclusion

Table. 1 Material Combinations

Mix 1	Mix 2	Mix 3
Conventional concrete (0% mineral replacement)	Cement replaced with 25% of (GGBS+Fly ash)	Cement replaced with 40% of (GGBS+Fly ash)

VI.MATERIALS AND PROPERTIES

(GGBS) The ground granulated blast furnace slag (GGBS) is a leftover from steel manufacturing industries. It delays setting time of concrete and the compressive and tensile properties of ggbs concrete is more than normal concrete. The ggbs provides poor workmanship and GGBS reduces alkali-aggregate reaction when aggregate used in concrete are alkali reactive.

(CLASS) The fly ash used belongs to class F category. Fly ash is a waste generated by thermal power plants which improves compressive strength of concrete and also decreases permeability and cost. Fly ash in concrete makes it sulphate resistant.

Table. 2 Chemical Composition Of Materials

Parameters (Mass)	Composition	
	Class F Fly Ash	GGBS

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Abstract—Now a days concrete is the most commonly used material in the construction. This paper suggests ternary blended concrete and results of an experimental investigation on concrete properties. By the addition of rice husk ash, slag and fly ash with the partial replacement of cement .The properties that are going to be investigate are workability and compressive strength. This paper discusses about the percentage to be added to get high strength and good workability . Cement replaced with rice husk ash,slag and fly ash at different proportions.

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I INTRODUCTION

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The main objective is to utilize the industrial waste like GGBS, and fly ash in making concrete not only considering about economy but also considering environment. The fly ash is already used because of its pozzolanic nature. Here it is blended with GGBS to improve properties of concrete.

III SCOPE OF WORK

The title itself says the concrete is going to made with granite powder and fly ash, which are industrial wastes released by thermal and polishing industries which is more in a huge quantity . These are very fine and are airborne, that means these are easily carried out by wind. These particles are also going to adverse effects on human beings who inhale them as these are airborne. These are going to breathing problems to those who subjected to that pollutant environment.

Concrete made with GGBS and fly ash will be the key to decline these wastes in the environment. The concrete also utilizes these wastes without going to cause any problems to human health after the usage them as the raw materials.

IV LITERATURE REVIEW

(1) Ternary blended cement system of OPC+ FA+SF compressive a better choice than binary blended cement system of OPC+SF to get strength comparable to control mix also is an economic and environmental benefit.[3] Based on the result, a 10% SFA and 4% CFA combination is being proposed as optimum for 20% Replacement of OPC in concrete matrix, since at this combination only 1.4% reduction in the compressive strength of OPC+SFA+CFA concrete was observed when compared with the controlling concrete.[1]"Effect of Coarse Powder on Strength Properties of Concrete "advised that fly water absorption drops to about 8% than conventional concrete and the all strength characteristics are increased. Sarvaiya and modi[2]the percentage increase in Compressive Strength of Ternary Blended Concrete is found to be higher or higher upto the all water to binder ratios.[3]fabricated concrete is obtained upon 30%replacement of grinding powder beyond that the concrete has poor abrasive nature.

V METHODOLOGY

1. Material required.
2. Concrete mix design.
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5. Comparing and plotting graphs.
6. Conclusion.

Table 1 Material Combinations

Mix 1	Mix 2	Mix 3
Conventional concrete (5%-cement replacement)	Cement replaced with 35% of (GGBS+Fly ash)	Cement replaced with 40% of (GGBS+Fly ash)

VI MATERIALS AND PROPERTIES

GGBS The ground granulated blast furnace slag (GGBS) is a leftover from steel manufacturing industries. It delays setting time of cement and the compressive and tensile properties of GGBS concrete is more than normal concrete. The GGBS provides pore refinement and GGBS reduces alkali-aggregate reaction when aggregates used in concrete are alkali reactive.

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Table 2 Chemical Composition (of Materials)

Composition		
Parameters (Mass)	Class F Fly Ash	GGBS

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Earthquake Analysis of Open Ground Storey Building Using ETABS

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Abstract— The infill material plays an important role under earthquake load on the structure. This article contains study on earthquake response of Open Ground Storey (OGS) building and a comparative study on the OGS building with different infill conditions under earthquake load. Typical building models were prepared as per the suggestions given by updated Indian earthquake code IS 1893:2016 by using ETABS-2016 finite element software. The applicability of code provisions has to be checked.

Keywords— *Open Ground Storey, Lateral stiffness, Lateral strength, RC structural wall, Braced Frame*

I Introduction

Nowadays increase in the population in metropolitan cities and inventions of smart cities in India resulting inadequacy of space or cost for all and ultimately which leads to Vertical growth of the city with taller and bigger buildings. In here case there will be scarcity for parking place for vehicles. The Open Ground Storey (OGS) of high rise building will gives the space for parking of vehicle.

Most of the of building failures in the past earthquakes shown that the Open Ground Storey in the buildings are more weak to take lateral loads. The infill material which is present in the building will give lateral stiffness to the building. However, the designer tries to discredit the stiffness of the infill wall for the analysis of framed building. The design based on this type of analysis may result in under-estimation of shear forces and bending moments in column of ground storey, and it may also be one of the causes for failure of building.

IS 1893:2016 gives the guidelines for OGS Reinforced Concrete Framed structure with URM infill walls as reinforced concrete structural walls. Code suggested that "Lateral stiffness in soft storey(s) is less than 80% of that in storey with infill wall, and Lateral strength in soft storey(s) is less than 90% of that in storey with infill walls". Buildings in the Indian earthquake zones III, IV and V shall be designed for RC structural walls [1] and one be detailed with all guidelines of IS 13920:2016 [2].

Lateral strength and stiffness of a Reinforced Concrete structure depends on the factors like, the type of building configuration adopted, designed size of structural members, ductility and material strengths, percentage of reinforcement present in members, characteristics of mass between the members in terms of strength and stiffness. There is a composite relation between all these factors which gives the final strength and ductility for the structure during earthquake shaking [3].

M. N. Tapkir et.al. for column beam joints the modified the capacity design rule, that capacity of column with high stiffness is added to the capacity of beam with less stiffness [4].

On 26/01/2001 morning 8.46, the power full earthquake that occurred in Gujarat, it has been most damaging earthquake in last few decades in India. The 6.9 (moment) quake caused a heavy loss of life and property. Almost 20,000 people lost their lives, and nearly 1.67 lac wounded. The estimated economic loss was ₹22,000 crores. Number of newly built high-raised RC framed soft story buildings were damaged in various regions in Gujarat as more distance cities as to 378km from epi-centre [5].

H.H Kowshik et.al conducted nonlinear analysis on soft storey buildings and formulated a rational method to designing OGS building for higher force instead of using multiplication factors given in various national codes [6].

Only lateral strength was increasing by code provisions and not ductility of that buildings. Whereas some alternate methods suggested for improvement in both ductility as well as lateral strength for improved seismic performance [7].

Fig. 1 Parking provided by Open Ground Storey

Soft storey effects are reduced by using concentric bracings in URM infill building for Indian earthquake zone V, which shows that eccentric bracings adopted in structure have less drift demand and lower chances of damage [8].

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Stabilization of Black Cotton Soil Using Tyre Granules and Gypsum Powder

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Abstract—Black cotton soil exhibits high swelling, shrinkage nature and low bearing capacity. Due to peculiar nature it forms a very poor foundation material for road construction and also for any structures in civil engineering. The method to improve engineering properties of soil is called Soil Stabilization. To enhance the engineering properties of the soil we use tyre granules and gypsum powder.

Tyre being highly durable, non-degradable, durable, resilient and high frictional resist helps us improve the engineering properties of black cotton soil. Gypsum has ability to bind soil particles and as a result to increase the strength of soil. It is judged by conducting various laboratory tests like Unconfined Compressive Strength (UCS) Test, California Bearing Ratio (CBR) Test, Standard Proctor Test to Soil Stabilization.

Keywords—Black Cotton Soil, Tyre granules, Gypsum powder, Soil Stabilization, Shear Strength, California Bearing Ratio (CBR), Standard Proctor.

I. INTRODUCTION

Black cotton soils form a major soil group in India. They possess high shrinkage and swelling properties and due to these properties it has been challenge to highway engineers. The black cotton soil is very hard and develop cracks when it is dry condition, loses its strength in wet conditions. Soil has very low bearing capacity. Due to its peculiar characteristics, it forms a very poor foundation material for road construction.

For soil stabilization we have to add certain amount of additive to the soil for improving their properties but these additives firstly proves to be more expensive. Whereas in case of soil stabilization some cohesive materials or some industrial or agricultural wastes can be used in place of cement or lime with the aim to improve its quality. This will result in cost effective construction. Moreover, due to rapid industrialization throughout the country the production of huge quantity of waste materials creates not only the environmental problems but also disposal hazards. Safe disposal of these materials is of prime concern and this situation can be addressed by the bulk utilization of these materials mainly in the field of civil engineering applications. In recent years the use of various waste products in civil engineering construction has gained considerable attention in view of the shortage and high costs of conventional construction materials, the increasing costs of transportation and environmental constraints.

Soil stabilization is a geotechnical technique of increasing and maintaining the stability of soil mass and chemical or mechanical alteration of soil to enhance their engineering properties. Stabilization increases load bearing capacity and shear strength of the soil and reduces the permeation thickness. Different types of techniques are being adopted for stabilization of such weak soil using various additives. Admixtures like tyre granules, gypsum, fly ash, lime etc. ... can be added to improve the properties of soil such as CBR.

Tyre granules is finely ground rubber produced from automobile and truck scrap tires. During the recycling process, steel and fiber cord are removed, leaving the rubber with a granular consistency. Continued processing with granulator or by cracker mill, possibly with the aid of cryogenics or by mechanical means reduces the size of the particles further. The particles are sized and classified based on various criteria, including color/black only or black and white. The granulate is sized by passing through a screen, the size found as a dimension or mesh. Tyre granules are also known as crumb rubber.

II. OBJECTIVES OF STUDY

To examine the suitability of rubber tyre granules and gypsum powder for stabilizing black cotton soil.

To improve the California Bearing Ratio of black cotton soil by using rubber tyre granules.

To improve the unconfined compressive strength and maximum dry density of the soil.

III. LITERATURE REVIEW

[3] Kasinia Kavya & Sarangh Dwaiba (2018) "Stabilization of black cotton soil by using granulated rubber powder", an experimental study it infers that there is improvement in CBR value & therefore optimum bearing capacity. Due to increase in capacity, thickness of soil layer can be reduced to serve the same functioning.[3]

Mr. Rajvinder Saini, Er. Balvir singh (2014) "Tyre rubber particles as a soil stabilizer", which says that by using optimum contents of tyre powder improves the performance of CBR value and this type of stabilization applicable in stabilization of black cotton soil in construction of road or in boundary portion of highways.[2]

Prachik Thul, Tushar Raut, Kunal Tekke, M. Inamdar (2018) "Stabilization of black cotton soil by using waste gypsum", which concludes that by addition of gypsum, swelling nature of black cotton soil reduces and maximum dry density increased and OMC decreased.[1]

T. Lava prasad, V. Sai Niharika, D. Suresh , G. Tejaswini, A. Nandini (2018) Carried out investigation on "Strength improvement of expansive soil by using tyre powder", which says that on addition of tyre powder to the soil result in decrease of plastic nature of soil & increase in softness of soil with increase in tyre powder. [4]

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Jagraj Singh and Prof. Vinod Kumar Sehrawat (2017)

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Stabilization of Black Cotton Soil Using Tyre Granules andGypsum Powder

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For soil stabilization we have to add certain amount of additive to the soil for improving their properties but these additives finally proves to be more expensive. Whereas in case of soil stabilization some different materials or some industrial or agricultural wastes can be used in place of cement or lime with the soil to improve its quality. This will result in cost effective construction. Moreover, due to rapid industrialization throughout the country the production of huge quantity of waste materials create not only the environmental problems but also disposal hazards. Safe disposal of these materials is of prime concern and this situation can be addressed by the bulk utilization of these materials mainly in the field of civil engineering applications. In recent years the use of various waste products in civil engineering construction has gained considerable attention in view of the shortage and high costs of conventional construction materials, the increasing costs of transportation and environmental constraints.

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Tyre granules is finely ground rubber produced from vulcanized and black synthetic. During the recycling process, steel and fiber cord are removed, leaving dry rubber with a granule consistency. Continued processing will granulate as a cracker mill, possibly with the aid of cryogenics or by mechanical means, reduces the sizes of the particles further. The particles are sized and classified based on various criteria, including color(black only or black and white). The granulate is sized by passing through a screen, the size based on a dimension or mesh. Tyre granules are also known as crumb rubber.

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9th - 10th October, 2020

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Certificate of Appreciation

This is to certify that Prof./Dr./Mr./Ms. Satyanarayanareddy Mamidi of JNTUA CEA Anantapur University, Ananthapuramu has participated and presented a paper titled "A Survey On Streaming Adaptation Techniques For QoS And QoE In Real-Time Video Streaming Paper ID: 151 in SCI-2020 held at Vasavi College of Engineering (Autonomous), Hyderabad, India.

Dr. S. C. Satapathy
System Chair

Dr. T. Adilakshmi
Organizing Chair (SCI-20)

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Double-Sided Split Ring Resonator-Based Probe Feed Patch Antenna with Enhanced Bandwidth for 5G and Ku Band Applications

Authors: [illegible]

Published in: Communications and Intelligent Systems

Publisher: Springer Singapore

Abstract

[illegible]

Double-Sided Split Ring Resonator-Based Probe Feed Patch Antenna with Enhanced Bandwidth for 5G and Ku Band Applications

Authors: J. Kasuma Kumari, M. Vinod Kumar, Pandarva K. Sharma, S. Murugan

Published in: Communication and Intelligent Systems

Publisher: Springer Singapore

Abstract

This paper discusses the enhancement of bandwidth in coaxial probe feed antenna achieved with double-sided complementary split ring resonator (CSRR). The split ring resonator-loaded antenna is designed on [illegible] substrate with [illegible] relative permittivity of 2.2 and the thickness of 1.6 mm. The length and width of the substrate and antenna are 20.8 mm × 18.2 mm and 20 mm × 16 mm, respectively. The dimensions of SRR were chosen to achieve the maximum bandwidth. To determine the features experienced, a conventional antenna without complementary split ring resonator is designed using the substrate to operate at the same resonant frequency 2.4 GHz. Antenna structure, the

Double-Sided Split Ring Resonator-Based Probe Feed Patch Antenna with Enhanced Bandwidth for 5G and Ku Band Applications

Authors: E. Rajarma Kumari, M. Vinod Kumar, Purushotha K. Dasma, S. Murugan

Published in: Communication and Intelligent Systems

Publisher: Springer Singapore

Abstract

This paper discusses the enhancement of bandwidth in coaxial probe feed antenna achieved with double-sided complementary split ring resonator (CSRR). The split ring resonator loaded antenna is designed on an FR4 dielectric substrate with the relative permittivity of 4.4 and the thickness of 1.6 mm. The length and width of the substrate and antenna are 35 mm × 30 mm and 28 mm × 25 mm, respectively. The dimensions of SRR were chosen to achieve the maximum bandwidth. To demonstrate the feature enhancement, a conventional antenna without complementary split ring resonator is designed and the bandwidth is found to be 2.4 GHz (from 10.6 GHz to 13 GHz). Antenna structure has

Double-Sided Split Ring Resonator-Based Probe Feed Patch Antenna with Enhanced Bandwidth for 5G and Ku Band Applications

Authors: S. Kesava Kumari, M. Vinod Kumar, Ramana K. Sharma, S. Murugan

Published in: Communication and Intelligent Systems

Publisher: Springer Singapore

Log in

Abstract

This paper discusses the enhancement of bandwidth in coaxial probe feed antenna achieved with double-sided complementary split ring resonators (CSRR). The split ring resonator loaded antenna is designed on a 1.57 mm thick dielectric substrate with the relative permittivity of 2.2 and loss tangent of 0.09. The length and width of the substrate and antennas are 220 mm × 180 mm and 40 mm × 30 mm, respectively. The dimensions of SRR were chosen to achieve the maximum bandwidth. To determine the features expansion, a conventional antenna without complementary split ring resonator is designed using the substrate to operate at the same resonant frequency 2.4 GHz. Antenna structures like

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SPEECH BASED HOME AUTOMATION USINGBLUETOOTH AND GSM

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Abstract-

Home automation is building automation for a home ,called a smart home or smart House. A home automation will control lighting,climate,entertainment systems and appliances.It may also include control and alarm systems.Incorporations are mainly implementing this for the use of old ,sighs and differently-abled people at home or to lessen the work of the people at home.For implementing this project we are using two modules, they are Bluetooth and GSM.The first module is used when the user is in the range of Bluetooth and the second module is used when the user is away from the home.Here we are using Raspberry Pi 3 model b as a microcontroller. For connecting to the on board Bluetooth of Raspberry Pi,we are using a application called Pi3 Bluetooth manager.

Keywords-

Home Automation, Raspberry Pi 3 model b,GSM module,On-board Bluetooth,Pi3 Bluetooth manager

I. INTRODUCTION

Home Automation refers to the automatic and electronic control of household features, activity and appliances.The control knobs located at different positions in the house will make it difficult for the members of the family to operate them. Hence the automation of the appliances will make the way easy,especially for the golden-agers and crippled persons.

In the present day world, mobile has become an integrated part in our daily life. Now-a-days smart phones are being used by everyone. With the advancement in the technology many applications that support android are developed. Because of The energy consumption is another factor that comes into account in smart homes. With the automation of homes, we can on or off the devices when they are not in use or the user is away from the home.By this the energy consumption can be reduced and in some cases it can be saved. By this the cost of living of an individual can be reduced.

Controlling of devices through voice is a thought that can be told or mean. The principal PCs in the modern day world have undergone an exact changes and then led by voice changes just a machine,be understood than ctrl-ll. So enormous advance in the field, really utilizing a voice interface gadget, we have appreciate.In the present world of technology where people are going behind the technologies to make life easier, the control over appliances through voice is a kind of it.[2]

A.System overview:

Here, in this project we are going to use two modules. They are Bluetooth and GSM. Here we are using Bluetooth when the user is at a distance that on the range of Bluetooth and we are using GSM when we are out of coverage of Bluetooth.[3]

B.Block Diagram:

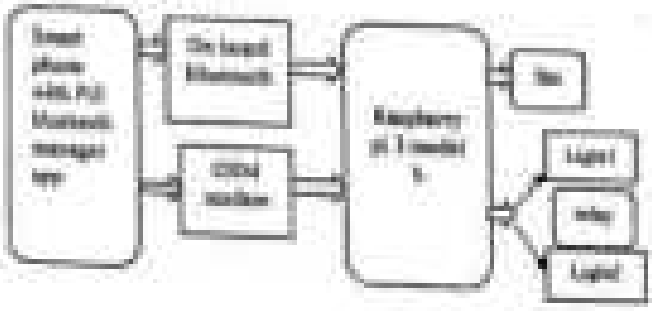

Figure 1.1 Block Diagram

The above block diagram consists of three parts namely they are the transmitter app i.e.,the smart phone with the android application and the

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Rectangular Patch MIMO Antenna with Defected Ground structure for 5G Applications

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Abstract

In this paper, a rectangular patch MIMO antenna is designed to operate 3.4-3.6 GHZ band for 5G applications. The geometry of antenna incorporates two rectangular patches fed by microstrip line individually. Rectangular slots are incorporated in the rectangular patch to increase the bandwidth of the antenna. The ground plane is defected with periodic square metallic patches, for increasing the bandwidth. FR4 Epoxy material with 1.6mm thickness and dielectric constant 4.4 is used as substrate. The parameters such as S_{11}(dB), radiation pattern, gain (dB) and radiation efficiency are analyzed. This antenna can be used for 5G applications in the sub 6 GHz band.

Keywords - *MIMO patch antenna, 5G, Defected Ground structure (DGS),PSWR, Return loss, Radiation pattern.*

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Analysis of Brain Tumor Classification using CNN Transfer Learning

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Abstract

Brain tumor detection is one of the crucial tasks in medical image processing. The difference between normal cells and infected cells is very less and almost both appear similar. So, the detection by the radiologist is inaccurate and there is a need of automated system for brain tumor detection. This paper proposes an automated brain tumor classification system using 3D Magnetic Resonance Brain Images using Convolution neural network transfer learning concept. The transfer learning concept is used to modify or fine tune the standard CNNs according to the user applications. This concept reduces the huge amount of input data requirements and minimizes the training and thus in computation time of the process. The top layers of benchmark CNN architectures like VGG16, ResNet 50 and InceptionV3 are fine-tuned and utilized for the tumor detection. The performance of the CNN structures are analyzed in terms of performance metrics such as Accuracy, specificity, sensitivity and validation losses.

Key Words: Brain tumor detection, magnetic resonance imaging, Convolutional neural network and Transfer learning

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A Nine-Level Inverter Topology with Equal Source Utilization

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Abstract— The maximum amount of load demand is supplied through batteries instead of a PV array for standalone applications in rural areas. This demands proper and equal battery source utilization for maximum operation (MLIs) with multiple sources for maintaining a better life of the battery. In this regard, a five-source nine-level MLI topology with the characteristics of equal source utilization is proposed. The number of voltage levels further increased either by increasing the number of switches or standard connection of the cell for improving the quality of the waveforms. The proposed topology has the capability of equal voltage source utilization, which increases the balance in the charge of batteries by proposing a new switching method for generating gate pulses. The effectiveness and robustness of the developed topology are verified for under various operating conditions in the MATLAB environment. Finally, an experimental test bench of the developed topology is built and the acquired experimental results validate the simulation results.

Keywords— Multilevel inverter; equal source utilization; multicarrier pulse width modulation

I. INTRODUCTION

With the scarcity of fossil fuels and increased concern for the greenhouse effect, the market for renewable energy resources is increasing [1]. Researchers have obtained considerable interest among all solar and wind energy sources. Increase of advanced technologies in power electronics [2]. Most of the electrical appliances operate on AC power, however, which involves the two-stage conversion and involving boosting and converting the array voltage to A.C [3, 4]. Previously two or three-level conventional inverters are utilized for this purpose, however, they suffer from filter requirements and low output voltage waveform quality. The recent development introduced multilevel inverters to overcome these limitations. MLIs offer several key benefits like low THD, reduced voltage stress of the switches, lower electromagnetic interference, higher efficiency and smaller filter as compare to two-level conventional inverter [5-7].

In general, the traditional MLIs are categorized into FC (Flying Capacitor) [8], NPC (Neutral Point Clamped) [9] and CHB (Cascaded H-Bridge) [10], among these topologies, due to the benefits like modularity in structure and simplicity, CHB has caught the attention by industries. The major limitation of the CHB architecture is a requirement of a higher number of DC sources. However, most of these topologies are not advantageous as their structure are greatly influenced by various factors like applications, control scheme, device count, cost and complexity. If the device count is large enough then the entire system becomes large and complex. As a result, the cost of the system will increase and reduce the converter efficiency and reliability. Moreover, when used for standalone applications in rural areas, the maximum amount of load demand is supplied through batteries instead of PV array [11]. This demands proper and equal battery source utilization for MLIs with multiple sources for maintaining a better life of the battery. It has been observed from the past decade that a large number of converter topologies are derived with reduced device count. Even though, it has drawn lots attention in the field of energy during.

In [12, 13] with sixteen controlled switches with eight number of DC sources for producing 9-level voltage is proposed. Hardware implementation of the proposed topology is difficult because of containing a higher number of components. An MLI with four DC source along with fourteen switches (same are bidirectional switches) for generating a 9-level waveform is proposed in [13]. On the same line, an MLI with five sources and twelve switches has been proposed in [14]. As compared to topology [13], it requires less number of semiconductor switches. A generalized inverter topology with one DC source is proposed in [15]. However, it requires a higher quantity of capacitors to generate a higher number of levels and it is difficult to maintain the balanced capacitor voltage. The voltage of capacitor balancing is difficult. A nine-level MLI with four DC sources, six switches along with three coupled diodes is proposed in [16]. However, the topologies proposed in [12-16] require a higher number of DC sources and it is difficult to share the equal energy of the sources. An inverter with nine-level is developed by connecting the five-level ANPC to FCHB in [17]. An inverter with nine-levels is developed by cascading the two 5-level ANPC has been developed in [18]. A topology with H-bridge type has been developed in [19]. However, it requires higher DC sources to synthesize the higher number of levels is the main drawback.

Most of the literature has paid attention to deriving new topologies with reduced device count and sources and less attention has focused on the equal energy utilization of the sources, which has a severe impact on the off-grid energy applications. Also, the proposed topologies [12-19] in the literature have more component count and use more number of isolated dc sources. In this regard, this paper presents an MLI

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Fault Diagnosis of Cascaded H-bridge Multilevel Inverter by DWPT Multi resolution and ANN

Author block

Abstract - Fault diagnosis of multilevel inverters (MLIs) is a major concern in the industries to recover and to improve the reliability of systems. In this regard, a two stage fault diagnosis of switch fault in cascaded H-bridge multilevel inverter (CHBMLI) with phase shift pulse width modulation has been implemented in this paper. In the first stage discrete wavelet packet transform (DWPT) multi resolution extracts the features of fault voltage in decomposed approximation as well as detail coefficients of the signal to extract features like fundamental peak, wave and standard deviation (STD) for pattern recognition. It gives better frequency resolution over other techniques by offsetting decomposing coefficients to the next stage, the features extracted from DWPT uses the ANN. This trained ANN is tested for pattern recognition during normal and fault conditions. Trained propagate gradient back propagation method is used in ANN training. This tested ANN classifies the switch fault successfully. This method efficiently diagnosis the switch faults under different load conditions. Performance of fault diagnosis method is modified using MATLAB environment.

Index Terms- Multilevel inverter, Discrete Wavelet Packet transform, Artificial Neural Network

I. Introduction

Multilevel inverters (MLI) have drawn more attention of industries over traditional ones in net function, because of their advantages like stress on power semiconductor switches are less, less harmonic distortion on load voltage wave forms less electromagnetic interference, less switching losses and high quality output voltage [1]. Compared to traditional two level inverters, MLIs have high number of power semiconductor switches leading to increased probability of faults, demanding fault diagnosis for reliable operation [2]. It was reported that 38% of faults in industrial drives are due to failure of power electronic switches [3]. The faults in power semiconductor switches can be divided into short circuit (SC) and open circuit (OC) switch failures [4]. The SC fault causes over current in the circuit, resulting in immediate shutdown of the system [5]. Causes for OC fault include failure of gate drive, disconnection of signal control line, failure of switching components, power failure, etc. OC fault is not thought to be as serious as SC fault, leads to secondary disturbance in the converter [6].

The conventional practice of conversion from SC to OC faults using fast reacting fuses are highly popular [7], hence the need is to diagnose the OC fault. Many researchers have proposed fault diagnosis by extracting features from current or voltage signal. The required computation or switching frequency of the voltage harmonics has been used to detect OC faults [8]. In this, threshold value of prevailing frequency component has been used to detect the fault which involves complex calculations. In [9], three phase five-level diode clamped MLI switch fault has been detected using wavelet decomposition. DC bus current wave value. Wavelet decomposition DC bus voltage evaluation sessions have been used to detect the OC fault [10]. The detection method using current as fault sensitive parameter, because of its load dependent nature is not preferred for an efficient fault detection system. OC fault diagnosis of MLI has been proposed using output voltage available sampled voltages [11] using Park's vector transformation [12], and the output voltage and current polarities [13].

Transient monitoring protocol testing fault in switches, results in behaviors in the system. To extract features of harmonics various transformation techniques namely Short Time Fourier Transform (STFT), Discrete Fourier Transform (DFT), Fast Fourier Transform (FFT), Discrete Wavelet Transform (DWT) and DWPT are used. Fault diagnosis of MLI using FFT for feature extraction and Artificial Neural Network (ANN) for classification has been presented in [14-15]. FFT is a frequency-domain based extraction method, and is not suitable to extract the features for non-stationary signals or transitory characteristics. However, FFT gives frequency components of the signal neglecting time information of signal [16]. Fault detection using DWPT for voltage source converter multilevel DC system has been presented [17]. However, DWPT converts time domain signal into time-frequency representation with fixed time length window size, resulting in poor frequency resolution. DWPT efficiently overcomes these limitations. Fault detection in stator tongue current induction motor drive using DWT has been presented in [18]. Fault diagnosis of inverter faults in BLDC motor drive using DWPT has been presented in [19]. Absence of proper information and incompleteness of only approximate sub-bands are the major limitations of DWT to overcome these limitations using DWPT are used. Pattern recognition helps to implement these techniques effectively. Pattern recognition helps to classify the fault accurately and automatically. The different methods used for this are knowledge based and artificial intelligence (AI) based [20]. Knowledge based methods like fuzzy logic, Markov model method and signal processing have been implemented in [20-23]. However, in multilevel this knowledge based methods expertise in the field is demanded. Also, they are expensive and

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International Conference on Automation, Signal, Processing, Instrumentation and Control (ICASIC 2020)

This is to certify that Prof / Dr / Mr / Ms D. JAYA KUMARI

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In the cloud environment, cloud storage is considered to be an essential service in the present day. Since users can store personal data online and can be able to retrieve the data or remotely store and manage on the internet. Authentication and authentication must be provided perfectly as illegal users may reveal the information of data stored and the symmetric key information used by the users. Long-standing data or keys are sensitive to brute force attacks and any other attacks. So Cloud Server has to take care of these issues.

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In the cloud environment, cloud storage is considered to be an essential service in the present day. Since users can store personal data online and can be able to retrieve the data or remotely store and manage on the internet. Authentication and authorization must be provided perfectly as illegal users may reveal the information of data stored and the sensitive key information used by the users. Long-standing data or keys are sensitive to brute force attacks and any other attacks. So Cloud Server has to take care of these issues.

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Arpita Mahajan
Editorial Coordinator

Design and Analysis of 2 X 4 Array Antenna With Single Slot For UWB Applications

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Abstract

The paper presents designing of the 2x4 array antenna with the ultra-wide band for the X, C, and K bands respectively. The proposed antenna can be designed by using the eight rectangular patches by placing as a 2x4 array by using a FR4 material as a substrate. It was observed that the designed antenna has ultra-wide band i.e., 10.26 GHZ and improved gain 9.2dB. It was found that the designed antenna can has a return loss of -31.1dB. The simulations can be done on the HFSS software.

Keywords: Array, ultra-wide band, HFSS, Return loss

I. INTRODUCTION

An Array antenna has become more popular from the last decade due to its compact size with the larger bandwidth and improved Gain over the normal antenna [1].Array antenna can be defined as a group of antennas in a rectangular structure to form a single antenna so that the radiation can directed in a particular direction & eliminated in unwanted directions [1].

Now-a-days microstrip patch antennas have numerous great purpose due other several advantages such as a compact size, low profile and low simulation cost[1].

In the earlier designs they found that for a 2x4 patch antenna the gain is 9.3db but the impedance bandwidth is very low i.e., 600 MHZ [4]. For 3x3 antenna array of rectangular topology has the bandwidth is 1GHZ and Gain is1.72dB [3]. An author had investigated that E-shaped patch array antenna the bandwidth was 1.3GHZ, and also they observed that their antenna has VSWR is1.32 [6].For the 2x4 antenna they found that the antenna can be operated in the multiband

II. Methodology:

It was observed that the radiation will be low for the single patch antenna and also the efficiency, Gain, Bandwidth is also low. Mainly for the single patch antenna SNR is also low and minor lobes effect is also high. But while for designing the array antenna size of the patch should also compressed, because all the factors will be depend on the size of the patch as well as the substrate.

An antenna array can be defined as a group of antennas in a rectangular shape so a single antenna so that the radiation can be directed into single direction and also the side lobes radiation can be suppressed. In this paper the proposed antenna can be designed by 2x4 arrays by using a with the ε_r 4.4. The size of the each patch of the is 12.5mmx17mm. The designed antenna can be made by using a line feeding technique.

III. Antenna Parameters

This paper mainly focuses on to design a rectangular shaped patch array antenna to attain the UWB. The compact largeness of the proposed antnd is 117x118x1.6mm.The height of the substrate is 1.6mm. The size of the each patch in the proposed antenna is 12.35x17mm. The Geometrical view of the proposed antenna is show in below figure 1.

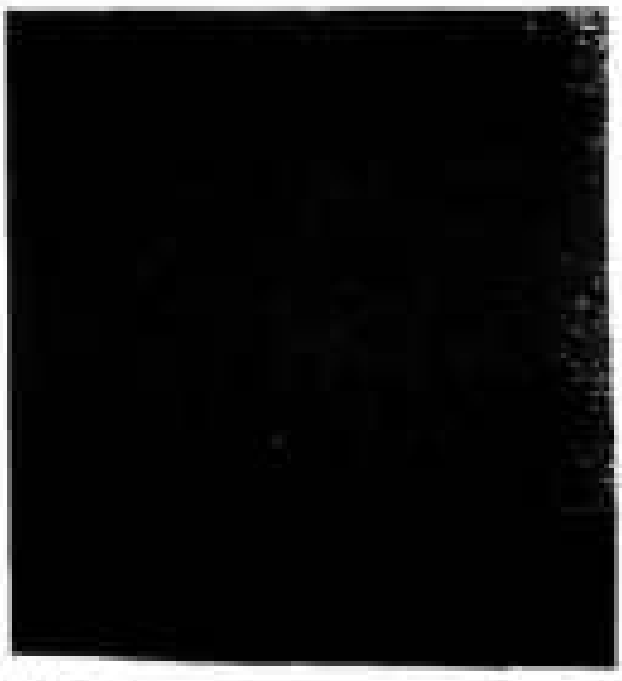

Fig 1. Final view of a proposed array antenna

In the above figure1 a slot had introduced on one of the patch in order to enhance the bandwidth of the proposed antenna. The fig 1 is a fourth iteration of the proposed antenna. The fig 2, fig 3, fig 4 shows the 1st, 2nd, 3rd iterations of the proposed antenna.

Design and Analysis of 2 X 4 Array Antenna With Single Slot For UWB Applications

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Abstract

This paper presents designing of the 2x4 array antenna with the ultra-wide band for the U, C, and X bands respectively. The proposed antenna can be designed by using the right rectangular patches by placing as a 2x4 array by using a FR4 material as a substrate. It was observed that the designed antenna has ultra-wide band i.e., 10.16 GHZ and improved gain 9.2dB. It was found that the designed antenna now has a return loss of -31.1dB. The simulation can be done on the HFSS software.

Keywords: Array, ultra-wide band, HFSS, Return loss

I. INTRODUCTION

An Array antenna has become more popular from the last decade due to its compact size with the larger bandwidth and improved Gain over the normal antenna [1].Array antenna can be defined as a group of antennas in a rectangular structure to form a single antenna so that the radiation can directed in a particular direction & eliminated in unwanted directions [2].

Now-a-days microstrip patch antennas have numerous great purpose due order several advantages such as a compact size, low profile and low simulation costs [3].

In the earlier designs they found that for a 2x4 patch antenna the gain is 9.3db but the impedance bandwidth is very low i.e., 600 MHZ [4]. For 3x3 antenna array of rectangular topology has the bandwidth is 1GHZ and Gain is1.72dB [5]. An author had investigated that E-shaped patch array antenna the bandwidth was 1.3GHZ and also they observed that their antenna has VSWR is1.33 [6].For the 2x4 antenna they found that the antenna can be operated in the multiband.

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It was observed that the radiation will be low for the single patch antenna and also the efficiency, Gain, Bandwidth is also low. Mainly for the single patch antenna SNR is also low and minor lobes effect is also high. But while for designing the array antenna size of the patch should also considered, because all the factors will be depend on the size of the patch as well as the substrate.

An antenna array can be defined as a group of antennas in a rectangular shape in a single antenna so that the radiation can be directed into single direction and also the side lobes radiation can be suppressed. In this paper the proposed antenna can be designed by 2x4 arrays by using a with the ε_r 4.4. The size of the each patch of the is 13.5mmx17mm. The designed antenna can be made by using a line feeding technique.

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This paper mainly focuses on to design a rectangular shaped patch array antenna to attain the UWB. The compact largeness of the proposed arrial is 117x130x1.6mm.The height of the substrate is 1.6mm. The size of the each patch in the proposed antenna is 13.5mx17mm. The Geometrical view of the proposed antenna is show in below figure 1.

Fig 1. Final view of a proposed array antenna

In the above figure1 a slot had introduced on one of the patch in order to enhance the bandwidth of the proposed antenna. The fig 1 is a fourth iteration of the proposed antenna. The fig 2, fig 3, fig 4 shows the 1st, 2nd, 3rd iterations of the proposed antenna.

Design and Analysis of 2 X 4 Array Antenna With Single Slot For UWB Applications

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Abstract

This paper presents designing of the 2x4 array antenna with the ultra-wide band for the S, C, and X Bands respectively. The proposed antenna can be designed by using the eight rectangular patches by placing as a 2x4 array by using a FR4 material as a substrate. It was observed that the designed antenna has ultra-wide band i.e., (0.36 GHZ and improved gain 9.3dB. It was found that the designed antenna can has a return loss of -10.1dB. The simulation can be done on the HFSS software.

Keywords: Array, ultra-wide band, HFSS, Return loss

I. INTRODUCTION

An Array antenna has become more popular from the last decade due to its compact size with the larger bandwidth and improved Gain over the normal antenna. [1].Array antenna can be defined as a group of antennas in a rectangular structure to form a single antenna so that the radiation can directed in a particular direction & eliminated in unwanted directions [2].

Now-a-days microstrip patch antennas have tremendous great purpose due order several advantages such as a compact size, low profile and low simulation cost.[3].

In the earlier designs they found that for a 2x4 patch antenna the gain is 9.3db but the bandwidth is very low i.e., 600 MHZ [4]. For 3x3 antenna array of rectangular topology has the bandwidth is 10HZ and Gain is 7.7dB [5]. An author had investigated that E-shaped patch array antenna the bandwidth was 1.9GHZ and also they observed that their antenna has VSWR is1.32 [6].For the 2x4 antenna they found that the antenna can be operated in the multiband.

II. Methodology:

It was observed that the radiation will be low for the single patch antenna and also the efficiency, Gain, Bandwidth is also low. Mainly for the single patch antenna VSWR is also low and minor lobes effect is also high. But while the designing the array antenna size of the patch should also considerable, however all the factors will be depend on the size of the patch as well as the substrate.

An antenna array can be defined as a group of antennas in a rectangular shape in a single antenna so that the radiation can be directed into single direction and also the side lobes radiation can be suppressed. In this paper the proposed antenna can be designed by 2x4 arrays by using a with the ε_r 4.4. The size of the each patch of the is (2.3mmx2.7mm. The designed antenna can be made by using a fast feeding technique.

III. Antenna Parameters

This paper mainly focuses on to design a rectangular shaped patch array antenna to attain the UWB. The compact largeness of the proposed arrival is (17x12)mm dimen.The height of the substrate is 1.6mm. The size of the each patch in the proposed antenna is (2.35x2.7mm. The Geometrical view of the proposed antenna is show in below figure 1.

Fig 1. Final view of a proposed array antenna

In the above figure1 a slot had introduced on one of the patch in order to enhance the bandwidth of the proposed antenna. The fig 1 is a fourth iteration of the proposed antenna. The Fig 2, fig 3, fig 4 shows the 1st, 2nd, 3rd iterations of the proposed antenna.

Compact Square patch antenna for 5G Communication

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Abstract:
The paper deals with design of a compact microstrip antenna (MSA) to communicate signals in the sub 6GHz band of 5G communication, particularly 3.4 -3.6GHz band. In this work, a square microstrip patch antenna with a shorting pin is printed on the RT duroid substrate. It is fed by coaxial feeding. Square slot is etched from the patch and the thickness of the substrate is increased for bandwidth improvement. The parameters such as return loss (dB), gain(dB) and radiation pattern are taken for analysis. It is inferred that the proposed antenna operates at desired band.

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DRIVER FRIENDLY AUTOMATIC HEADLIGHT CONTROLLER

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ABSTRACT
A Driver friendly head light controller that automatically controls the vehicle headlight beam is designed and tested. The microcontroller Atmega328P, Ambient light sensor opt3001 and LEDs are used to prepare a prototype that switches the high beam to low beam whenever it will get another vehicle coming towards with high beam and automatically headlight turn on when surrounding is dark and turn off when day light starts. As a result the road accident will be decreased rapidly. It is possible to implement because the device is cheap in cost, easy to implement and it works automatically. Index Terms: High beam light, Intelligent controller,

I.INTRODUCTION

Now a days automobile technology plays a prominent role in developing countries. Every house contains atleast one vehicle for transportation purpose. This development leads to some advantages as well as disadvantages too. Our main motto is to overcome those trouble shoots. One of the main problem is that the rate of night time accidents is higher than the day time. The parameters causing these trouble shoots are poor lighting condition, high glare of light coming from the incoming vehicle which creates blind spot to the automobiles. So, to overcome this trouble an automation system has to install in the vehicle to switch the headlight from high beam to low beam automatically.

This project defines the automatic headlight controller.Usually the headlight system contains two reflector lamps the low beam and high beam lights. Automatic High Beam Controller is our prototype which can able to low the headlight beam when it detects an light of high intensity . mostly the driver manually switches between the low and high beams, to make it automatic this system is very friendly. The second reason is the fear of dazzling other drivers and therefore causes catastrophic accidents. Therefore, an automatic controller to switch off the high beam lights when facing other vehicle is considered necessary. Such feature will make the driving experience more convenient in the night time. Moreover, it makes the road more friendly to the other drivers on the road.Most of the proposed system are based on complex combination of cameras, image processing techniques, LDRs to detect the vehicles and control the high beam light. The second purpose of this system is to on and off the headlights automatically based on surrounding light conditions. This avoid the automobilist to operate manual switching. This control unit can be mounted to all vehicles to ensure the high beam switching depending on the light density without the influence of the driver. application of automatic high beam is our high beam response due to another high beam and automatically our high beam becoming low. Hence by mounting this system in the vehicle driving at night times makes more flexible and secure.

2. WORKING OF THE SYSTEM:

When we turn on this system the headlights remains off and the intensity gets calculated continuously. When the luminous value is less than the mentioned value the headlight glows and remains on. When a high intensity of light falls on the sensor then it switches to low beam and when it comes to the daytime the sensor detects the surrounding light intensity and the headlight turns off. This saves the battery life time.

A Bird View on Radio Frequency Based Energy Harvesting System

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ABSTRACT

Mobile devices are an essential part of modern life and are using throughout the globe.The evolving telecommunications demand operations that are energy-intensive. With ever increasing usage of mobile phones, the best way to power these is to use a RF-energy harvesting system. The present paper includes experiments under research done regarding RF-energy harvesting was studied and the essential outcomes were highlighted. The studies proved that a micro strip patch antenna will be more suitable for the reception purpose of the RF signals in the frequency of 900 and 1800 MHz because of its compact size. The major components used in the structure are an aerial, matching network, conversion and processor control circuit. In this paper, the performance and development of these components were studied. A rectifier circuit where the conversion process of signal to voltage was simulated by the investigators in advanced design system (ADS) to know the system performance. The L-section filter for impedance matching purpose is used. Circuit used for managing power is able to turn the mobile handset(load) ON when adequate power is accumulated.

Keywords

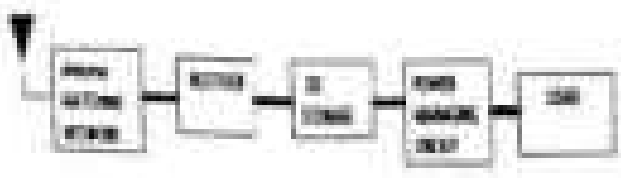
RF Energy, Antenna, Impedance matching network, Rectifier, Power managing circuit, Load.

1. INTRODUCTION AND LITERATURE SURVEY

The concept of energy harvesting is not new rather is more pare picture 100 years back. The technique of taking out power from external source to produce electric power is called energy harvesting. The advantages of this technique is that as the energy is freely available for harvesting, process does not cause from harmful effects of radiations and is "green" for the environment. Huge impact of wireless communication devices in surroundings has resulted in availability of large amount of abundant RF energy in our environment that can be harvested using antennas. These EM waves can be converted into electrical energy by using appropriate antennas. Usually, passive sensors receive only some signals when the receiving antenna is not aligned with the transmitting antenna. To capture arbitrary EM waves which exist in all area of orientation and polarization, circularly polarized antenna is a preferred choice. Wireless power transfer (WPT) is a process in which the electrical power is transferred from one point to another point without any medium or physical link. In the year of 1894, Tesla[1] first found the idea of wireless power transfer[2]. In the beginning of 1960s, Nikola Tesla did many experiments related to transferring of electrical power wirelessly.WPT techniques mainly fall into two categories, non radiative and radiative. In former one, power is carried to target distances by magnetic fields using inductive coupling. In later one, power is carried by beams of Electromagnetic. WPT requires dedicated transmitter, which was a major drawback.In 1968, Brown proved that a small helicopter can be powered using RF when a transmitter of high power is used. The oldest existing antennas, those used by Heinrich Hertz in 1888 in his first experiments for energy harvesting applications, ideal design of an antenna for energy harvesting, and improved RF power harvesting are described.But RF energy harvesting system model for which no dedicated transmitter is required making it more efficient[3,4].Though the concept of RF power was introduced way back in the past, prominent work regarding its usage was under process since 2010. Many people conducted experiments to investigate the practicality of harvesting RF energy. This paper provides a extensive analysis and discussion of all these experiments. These experiments were mainly focused on the extension of energybit phone where the device operates under sp[illegible] where the frequency band is of the order of 1800MHz[5].Self sufficient systems are made practicable by the latest trends in RF energy harvesting technology.The ambient RF power is a good potential candidate for the energy supply as it is widely developed from numerous reliable electromagnetic resources [4]. Extensive use and acceptance of batteries are increased due to growth in the usage of devices such as mobile, wireless, remote sensing and wireless networking[7].

2. RF-ENERGY HARVESTING SYSTEM

The RF energy is ubiquitous. Nowadays, most TVs, radio, mobile phones and a lot of electronic gadgets transmitting RF signals into air continuously. Since the RF signals are available almost in all locations, this paper is aimed at harvesting that RF signals power and use the harvested energy to give supply to a wireless sensor or a small electronic device[3,4]. Fig.1 shows the proposed structural block diagram [3-5].



A Bird View on Radio Frequency Based Energy Harvesting System

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Mobile devices are an essential part ofmodern life and are being throughout the globe.The evolving telecommunications demand operations that are energy-intensive. With ever increasing usage of mobile phones, the best way to power them is to use a RF-energy harvesting system. The present paperincludes experimental under research done regarding RF energy harvesting was studied and the essential concepts were highlighted. The studies proved that a micro strip patch antenna will be more suitable for the reception purpose of the RF signals at the frequency of 900 and 1800 MHz because of its compact size. The major components used in the structure are an antenna, matching network, converter and powered control circuit. In this paper, the performance and developments of these components were studied. A rectifier circuit where the conversion process of signal to voltage was simulated by the investigators in advanced design system (ADS) to know the system performance. The L-section filter for impedance matching purpose is used. Circuit used for managing power in able to save the mobile battery(load) life when adequate power is accumulated.

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Different Fading Channels

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ABSTRACT

Due to the predominant use of wireless communication networks by Mobile applies, there is incredible growth in network traffic that leads to the insufficient network capacity. This can be endeavored by using MIMO.MIMO has been considered as the alluring and pledging technique to improve capacity and Spectral Efficiency for future generations in wireless networks. Channel modelling is significant in MIMO. The transmission of signal in wireless communications depends upon the channel. Hence the performance of wireless communication can be obtained by modelling of fading channel. Here, the capacity of different fading channels and Spectral Efficiency is derived and results are shown using MMSE and ZW-MMSE Estimators.

1. INTRODUCTION

Based on the present scenario, wireless Communication has major impact when compared to wired [1]. Day-to-Day technologies growing exponentially in the field of wireless communication such as 4G and 5G (nevertheless) uses the principles of MIMO, Spatial Multiplexing and Beamforming. Here in wireless communication the Channel Modelling plays a crucial role. The Channel Capacity a important parameter in wireless communication. But the signal transmission in wireless communication is random in nature due to numbers which results in multipath propagation, so the receiver end, these signal will combine which results in Destructive or Constructive interference between the signals due to arrival of signals in different directions. In this paper we are going to obtain capacity of different fading channels.

1.1 FADING

The signal transmitted from transmitter undergoes various paths in channel due to various factors such as geographical premises, obstacles, variables that vary with time, these factors are known as Scatters. Due to these Scatters the signal gets Reflected, Refracted, Diffracted and Scattered which results in multi paths. This Phenomena is known as Multipath propagation [2]. Owing to this, the signal strength varies which is known as FADING. The various factors that affect the signal strength are as follows

1) Reflection: When the signal travels in medium it will get affected by buildings or obstacles around the surroundings then the signal is bound or reflected which results in phase change of the signal [1]. Reflection takes place when the surface is flat.

2) Diffraction: This happens when the signal is obstructed or affected by uneven surface then the signal gets attenuated and slight bending of the signal happens [1]. It usually happens at the edges of scatters or uneven surfaces.

3) Scattering: When the incoming signal is obstructed by the particle (such as buildings, cars etc) the signal scatters in various directions. The signal is redirected in various directions [2]. The reflection, diffraction and refraction are the various forms of scattering.

4)Doppler Shift: This happens whenever there is relative motion between signal and the receiver that there is change in frequency or wavelength .The apparent shift in signal frequency or wavelength due to receiver's motion is known as Doppler Shift[2].

The fig (1) which is shown below explains about the Multipath Phenomenon

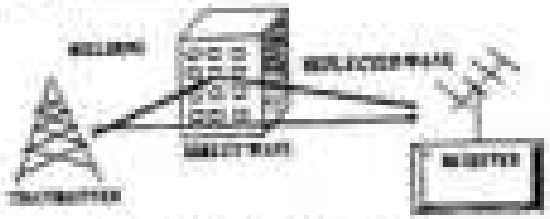

Fig 1: Multipath Phenomenon

2. METHODOLOGY

2.1 Channel Modelling

The transmitted power is equal to sum of received power and noise power.

i.e $P_t = P_r + P_l$

where P_t is transmitted power (1)

P_r is received power (2)

P_l is the power loss (it includes noise power) (3)

In wireless communication, when the is transmitted from transmitter is propagates in multiple directions [7]. This results in variation of signal strength. At receiver end, if the signal strength is greater than the threshold, we can reconstruct the signal. If the signal strength is less than the threshold, we cannot reconstruct the signal.

In order to reconstruct the signal, the received power should be more. To have more received power, the transmitted power should be more. We can increase transmitted power up to some extent, but it results in more cost as well as the size of the antennas increases to handle large amount of the power. Sometimes if the noise power is more signal than the received power, we cannot retrieve the signal at receiver.

$$y[t] = h * x[t] + noise \quad (4)$$

where h is channel response between user equipments and Base Station, it depends on the channel.

By characterizing the channel, we can overcome the loss and transmitted power can be reduced. Characterizing defines how the signal is relaying in the channel. Therefore, it is necessary to model the channel, in wireless communication the signal

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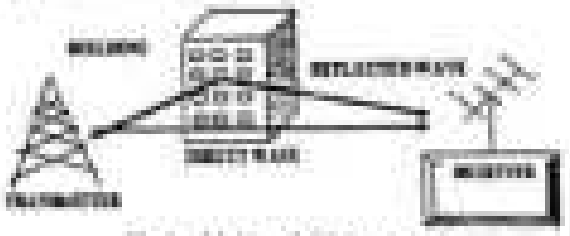

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Analysis of MIMO Microstrip patch antennas for 5G Applications

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ABSTRACT

This paper illustrates relative study of different 2x2 MIMO microstrip patch antennas for future working 5G applications which are operating at 2.45GHZ resonant frequency. To design these antennas we use a simulation software called HFSS which is used to design complex radio frequency electronic circuit elements. For designing these antennas we use Flame resistant epoxy substrate which has a dielectric constant of 4.4. From the simulation results the parameters like Gain, Bandwidth, Return loss, Radiation, Directivity. The proposed receiving systems are suitable for LTE and WiFi.

Keywords

HFSS (High Frequency Structured Simulator), 5G (Fifth Generation), MIMO (Multi Input Multi Output)

1. INTRODUCTION

Now a days 5G is important however it has the potential to support millions of devices as cellular system and it has the potential to transform the lives of people around the world. [1]As 5G is used for wireless applications like real WiFi zone and its network availability will be everywhere .5G communications uses massive MIMO technology to deliver better throughput and better spectrum efficiency. In order to increase the overall gain and to provide diversity reception by using antenna arrays. As the first wireless system is SISO (single input single output) it has the ability to increase the received signal gain and provide multipath fading but it fails in multiple environments which is an advantage in MIMO systems.[4]MIMO systems are used because they have the capacity to increase coverage and data rates. In order to achieve 5G's aims can this MIMO system uses MIMO code. MIMO structure provides high data figures.

Due to transmission of multiple data symbols simultaneously using transmit antennas. As the antenna designed at 2.45 we use patch antennas. These are inexpensive to manufacture, provides good efficiency and easy for fabrication which are usually used in mobile communication system.[3] The circular patch antenna is designed by FR4 Epoxy substrate which has a dielectric constant of 4.4 and the substrate height is 1.6mm.[3] The microstrip patch antenna is an antenna which uses a microstrip technique implemented on a Printed Circuit Board which is referred as an internal antenna.

2. MIMO TECHNIQUE

This technique has multiple antennas at transmitter and receiver which is used for sending and receiving more than one data signal simultaneously by exploiting some radio channel for multipath propagation.

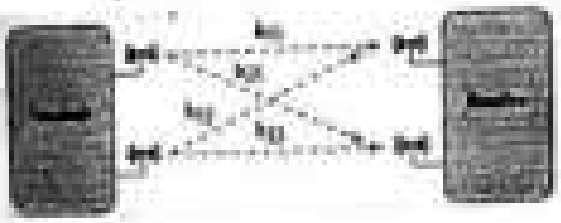

Fig 1: Basic diagram of MIMO system

2x2 MIMO systems has a pair of transmitting antennas at one end, two antennas at receiving end. It develops by exchanging wireless signals across the propagation channels.

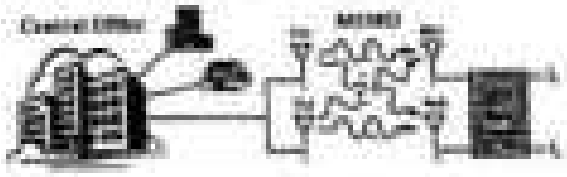

Fig 2: 2x2 MIMO (multi input multi output)

3. OPERATING MECHANISM

HFSS is a simulation tool which stands for high frequency structured simulator. It is used for designing of antenna with full wave electromagnetic field which is a 3D volumetric passive device modeling that has an advantage of familiar microsoft window with graphical user interface,electromagneticsimulation, visualization, solid modeling.

4. ANTENNA DESIGN

4.1 Microstrip

Microstrip antennas which have a low profile and is in a dielectric constant which is sandwiched in between a microstrip antenna with a metal patch mounted on it.These are small in size and has a less radiation. These are light weight, volume is low, low cost, low mass, less fabrication cost. Rock size dielectric material, capable of operating dual and triple frequencies. These antennas are used in RFID, mobile communication, health care operating at 2.45GHZ.

4.2 Patch

This is also known as panel because of its wafer like dimensional antenna structure.This consists two metallic plates where these two plates are overlapped, where one is larger than the other which has dielectric plate in the middle. This is used for portable wireless devices which are easy for fabrication on printed circuit boards. In this the beam is

TRANSFORM BASED APPROACH TO MITIGATE PILOT CONTAMINATION IN MASSIVE MIMO

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Abstract— Massive MIMO is one of the prime technologies in wireless communication systems for spectral efficiency and achieving high data rates. MIMO is a technology which uses diversity as a basic principle that mitigates the effect of fading at receiver by using multiple antennas at input as well as output. Use of massive MIMO is technology that promises to deliver enhanced link reliability as well as high data rates. This has given a way for a lot of research interest in this field. When it was tested the use of very large antenna array at the base station (BS), typically of the order of few thousands, can potentially provide large gain in robustness, security and system throughput of wireless communication systems. As well as with the advantages, there are also getting entirely new research challenges that need to be provided a solution for massive MIMO. One of these challenges is Pilot contamination. Multiple neighbor cells may use the same pilot sequence, and pilot patterns of the multiple neighbor cells may overlap, which will directly affect the performance of the channel estimation. This is the main reason for the limited performance of massive MIMO. Even though a large number of antennas are incorporated, still the gain is getting degraded. In this paper different matrix based transforms using orthogonal basis vectors are used to generate pilot sequence that reduces pilot contamination which is predominant in 5G communication.

Keywords— Spectral efficiency, Massive MIMO, Pilot contamination, Multiplexing gain.

I. INTRODUCTION

5G is an upgrade for 4G which is currently under development. 5G provides faster data rates, lower latency, higher connection density. The plans of 5G are better battery consumption, Device-to-device communication, and to improve overall wireless coverage. It is over 10 times faster than 4G. The max speed of 5G is as fast as 20 Gbps. Massive MIMO, millimeter wave, small cells, Li-Fi all the new technologies from the previous decade can give a data rate of 10Gbit/s to a user, with a low latency which can never be seen , and capable of providing connections for at least 100 billion devices . For 5G networks, the date of commercial introduction has been estimated. Different estimations have been made for the date of commercial introduction of 5G networks. However, Massive MIMO has become a big challenging problem which limit the performance of 5G cellular system.

I.1 PILOT CONTAMINATION

Massive MIMO is one of the prime technologies in wireless communication systems for spectral efficiency and achieving high data rates. MIMO is a technology which uses diversity as a basic principle mitigates the effect of fading at receiver by using multiple antennas at input as well as output i.e. spatial multiplexing . Use of massive MIMO is technology that promises which are expected to deliver enhanced link reliability as well as high data rates. This has attracted lots of research interests in this field. When it was tested the use of very large antenna arrays at the base station (BS), typically of the order of few thousands, can potentially provide large gain in robustness , security and system throughput of wireless communication systems. As well as with the advantages, there are also getting entirely new research challenges that need to be provided a solution for massive MIMO. With these problems because of the MIMO and because of the limited orthogonal pilot sequences, multiple neighbor cells may use the same pilot sequence, and pilot patterns of the multiple neighbor cells may overlap, which will directly affect the performance of the channel estimation. This is called pilot contamination. The following are different solutions surveyed.

1.1.1 Solution - 1

If pilot re-use is completely done, inter-cell interference will increases, to reduce this limitation, we use this scheme. Pilot re-use concept is akin to the frequency reuse concept. In this paper [1], the author uses pilot assignment strategy. In this 9 hexagonal cells are considered and they are three way partitioned. The pilot reuse factor is 1/V were V is the number of cells that uses orthogonal pilots. If V>1, it means that pilot contamination is reduced by assigning orthogonal pilots to the adjacent cells. In the fig.1 we pointed the cells having the same color uses same set of pilot sequences and cells having non-white will use the Orthogonal pilots.

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Comparative Analysis of MOD-ECDH Algorithm and Various Algorithms

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ABSTRACT

Cryptography has remained a well-known and well-researched topic for ages. It is the first line of defense for any networked system. A lot of algorithms have been developed using symmetric and asymmetric cryptographies. From the security point of view, Asymmetric Cryptography is more popular due to its enhanced security. RSA, DSA, ECS, DES, ECC, and other algorithms have been developed for realizing Asymmetric Cryptosystem. These algorithms are primarily used to ensure a secure and reliable communication. These algorithms play a vital role in establishing a secure line of communication. Elliptic Curve Cryptography (ECC) provides the same level of security with a smaller key size. In the present paper, a developed MOD-ECDH was proposed and, then, it was compared with other various popular algorithms like ECDH, RSA, and ECC. Empirical and simulation results of applying the algorithms of ECDH and MOD-ECDH were described in detail. According to the result analysis, it is evident that the proposed algorithm outperforms other algorithms in terms of processing time and key size.

KEYWORDS: *Elliptic curve diffie-hellman algorithm (ECDH); Modified elliptic curve diffie-hellman algorithm (Mod-ECDH); Elgamal cryptosystem (ECS); Rivest shamir adelman (RSA); diffie-hellman (DH); Voice over internet protocol (VoIP).*

1. Introduction

Two keys in asymmetric cryptography are used: one is the public key given to all users and the other is the private key known by the owner only. Public key is generated by the end user using mathematical derivation. An elliptic curve is drawn using ECDH algorithm and, based on the agreed-upon points, both parties will exchange data. By using these parameters, both parties perform encryption and decryption operations during the conversation between sender and receiver.

In the symmetric key cryptosystem, a secret key is not shared between sender and receiver, which will not make data communication insecure. Symmetric key cryptography is faster than asymmetric cryptography because of generating two keys. A lot of researchers have developed many algorithms to increase the speed of asymmetric cryptography. Elliptic Curve Cryptography (ECC) [1,1] has been developed with a smaller key size that enjoys high security. ECC is the best alternative to RSA-based cryptosystem [4]. RSA requires 1024 bits of key size because ECC requires only 160 bits for equal security [2, 3].

Cloud paradigm is used for offering high-quality, fast services to users and is in the best delivery model and globally. Bawazir et al. [5] proposed group operations on Edwards curve. Cloud paradigm is also used as the best Customer Relationship Management (CRM) tool. Cloud paradigm is also useful for IOT and Mobile communication technologies.

Data flows in communication networks and they are always at risk to more vulnerabilities or security breaches. These security threats may include breach of confidentiality, data integrity problems, authenticity problems by impersonation, man-in-the-middle-attack, and border attacks. In order to overcome these breaches, some algorithms have been developed [9]. These

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KEYWORDS: *Elliptic curve diffie-hellman algorithm (ECDH); Modified elliptic curve diffie-hellman algorithm (Mod-ECDH); Elgamal cryptosystem (ECC); Rivest shamir adelman (RSA); diffie-hellman (DH); Voice over internet protocol (VoIP).*

1. Introduction

Two keys in asymmetric cryptography are used: one is the public key given to all users and the other is the private key known by the owner only. Public key is generated by the end user using mathematical derivations. An elliptic curve is drawn using ECDH algorithm and, based on the agreed-upon points, both parties will exchange data. By using these parameters, both parties perform encryption and decryption operations during the conversation between sender and receiver.

In the asymmetric key cryptosystem, a secret key is not shared between sender and receiver, which will not make data communication insecure. Symmetric key cryptography is faster than asymmetric cryptography because of generating two keys. A lot of researchers have developed many algorithms to increase the speed of asymmetric cryptography. Elliptic Curve Cryptography (ECC) [1] has been developed with a smaller key size that enjoys high security. ECC is the best alternative to RSA-based cryptosystem [4]. RSA requires 1024 bits of key size because ECC requires only 160 bits for equal security [2, 3].

Cloud paradigm is used for offering high-quality, fast services to users and it is the best delivery model used globally. Bernstein et al. [5] proposed group operations on Edwards curve. Cloud paradigm is also used as the best Customer Relationship Management (CRM) tool. Cloud paradigm is also useful for IOT and Mobile communication technologies.

Data flows in communication networks and they are always at risk to many vulnerabilities or security breaches. These security threats may include breach of confidentiality, data integrity problems, authenticity problems by impersonation, man-in-the-middle-attack, and insider attacks. In order to overcome these breaches, some algorithms have been developed [9]. These

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Secure Dynamic Interactive Blood Bank based on Cognitive Computing

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ABSTRACT

Cognitive based (Chatbot) blood bank provides a communication platform among the stakeholders of blood bank. In the past, the blood recipient will have to contact the blood bank and the blood donors individually, which is a time-consuming process. To address this issue, this paper proposes a Secure Dynamic Interactive Blood Bank based on Cognitive Computing, which can fulfill the blood request of the needy with without much difficulty. Hence, the proposed work aims to overcome this problem by requesting the recipient to simply send a message to a chatbot. The motivated individuals who are willing to donate blood can register their name by interacting with the chatbot. If the requested blood group is available in the blood bank/registered donor, then the recipient will get contact details of the blood bank/registered donors available at that instant. Donor data will be maintained in Cloud database. The proposed system is a cognitive chatbot, which acts as a communication platform among the stakeholders such as blood bank, blood donor, and the needy. This system is built using cognitive technology of Google; it makes conversations using chatbots very similar to human conversations, thereby making the proposed system more efficient than the existing ones.

KEYWORDS: *Cognitive computing; Chatbots; Machine learning; Natural language processing; IBM Bluemix; Google's api.ai.*

I. Introduction

Blood is a non-replenishable entity, the only source of which is humans. Timely availability of quality blood is a crucial requirement for rendering healthcare services. Therefore, maintaining the quality of blood and identifying Professional Donors represent a major responsibility of blood banks. NACO (National AIDS Control Organization) and NABH (National Accreditation Board for hospitals and Healthcare Providers) have provided guidelines for ensuring the quality of blood and identifying Professional Donors [1]. Moreover, manually monitoring standards and identifying professional donors is a challenging job. Blood is the most important and critical element in human life. According to the bible, blood refers to life every

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year that a nation requires about 4-5 crore units of blood out of which major 40 Lakh units of blood are available. There are several blood banks around the world; however, they are not offering any contact between the donor and the needy, which is often seen as a disadvantage and leads possibly to one's death. This paper aims to beat this communication barrier by providing a blood bank chatbot. This automated application is proposed to bring voluntary blood donors and the needy onto a common platform.

According to the recent statistics of a blood bank in India, someone needs blood every two seconds. More than 38,000 blood donations are required every day. A total of 30 million blood components are transfused each year. The average red blood cell transfusion is approximately 3 pints. The blood type most often requested by hospitals is Type O. Sickle cell patients can require frequent blood transfusions throughout their lives. More than 1 million new people are diagnosed with cancer each year. A single car accident victim can require as many as 100 units of blood.

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Secure Dynamic Interactive Blood Bank based on Cognitive Computing

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ABSTRACT

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4. Coronary Heart Disease prediction using genetic algorithm based decision tree

From the book Intelligent Decision Support Systems

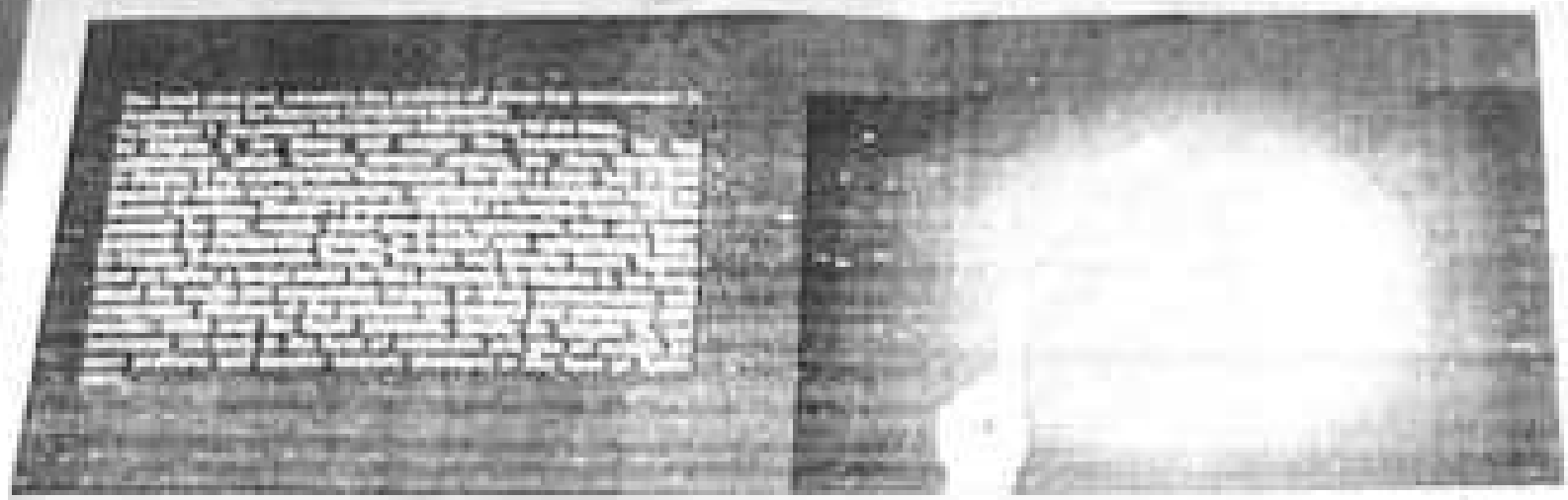
Reddi Sharanjani, Vankamamidi S. Naresh and Nistala V.E.S. Murthy

https://doi.org/10.1515/9783110622805-004

Citations 3

Abstract

Heart disease prediction is a burning issue, irrespective of age, work pressure, stress, and food habits, which can disturb the heart functionality. Classification of heart disease can be a value addition to doctors; this chapter aims at supporting doctors in taking decision to classify healthy and coronary heart disease (CHD) patients using popular modified decision tree by using genetic algorithm. Performance analysis of the proposed method is compared against data-mining approach, probability rule base classification. Five machine-learning algorithms include K-Nearest Neighbor (KNN), artificial neural network, support vector machine (SVM), decision tree, and modified decision tree using genetic algorithm. Analysis was performed with reference to accuracy, execution, and sensitivity. Results show that the decision tree using genetic approach predicts the CHD patient more accurately than other existing algorithms.



Secure Multiparty Key
Agreement: Theory and
Practice

Wideband MIMO Antenna with Diverse Polarization and Radiation Pattern for 5G Applications

Dinesh Sharma and E. Kusuma Kumari

1 Introduction

With the advent of the 5G communications, the need for the communication systems with high data transfer rate will be essential and to serve the need of the high data rates of future wireless communication systems, the need for antennas with wide bandwidth has become a necessity. Any frequency in the range of 400–90 GHz can be used for the 5G applications but for the initial commercial purpose, frequency band less than 6 GHz is been given priority all over the world, especially, the frequency of 3.5 GHz [1]. This particular frequency has got keen interest as the present-day communications systems available with the current service providers can support this frequency with some minor modifications and is useful for the implementation of the 5G services in the early stages.

Present-day communications systems require multimode and multi-band antennas to satisfy the multifunctional requirements of the users. For an antenna to serve multiple applications techniques of polarization diversity and radiation pattern diversity have come into limelight. But the major limitation of the MIMO antennas is the mutual coupling effect, which can be eliminated by using some decoupling structures [2]. In [3], a space coupling technique has been proposed to reduce the coupling but it will increase the size of the antenna. In [4], a separate built-in decoupling structure has been used in the antenna to reduce the coupling but with the introduction of the additional structure, the design complexity has been increased. Similarly, different techniques were been proposed by different researchers in [5–13] but all of them have either antenna size increasing problem or increase in design complexity.

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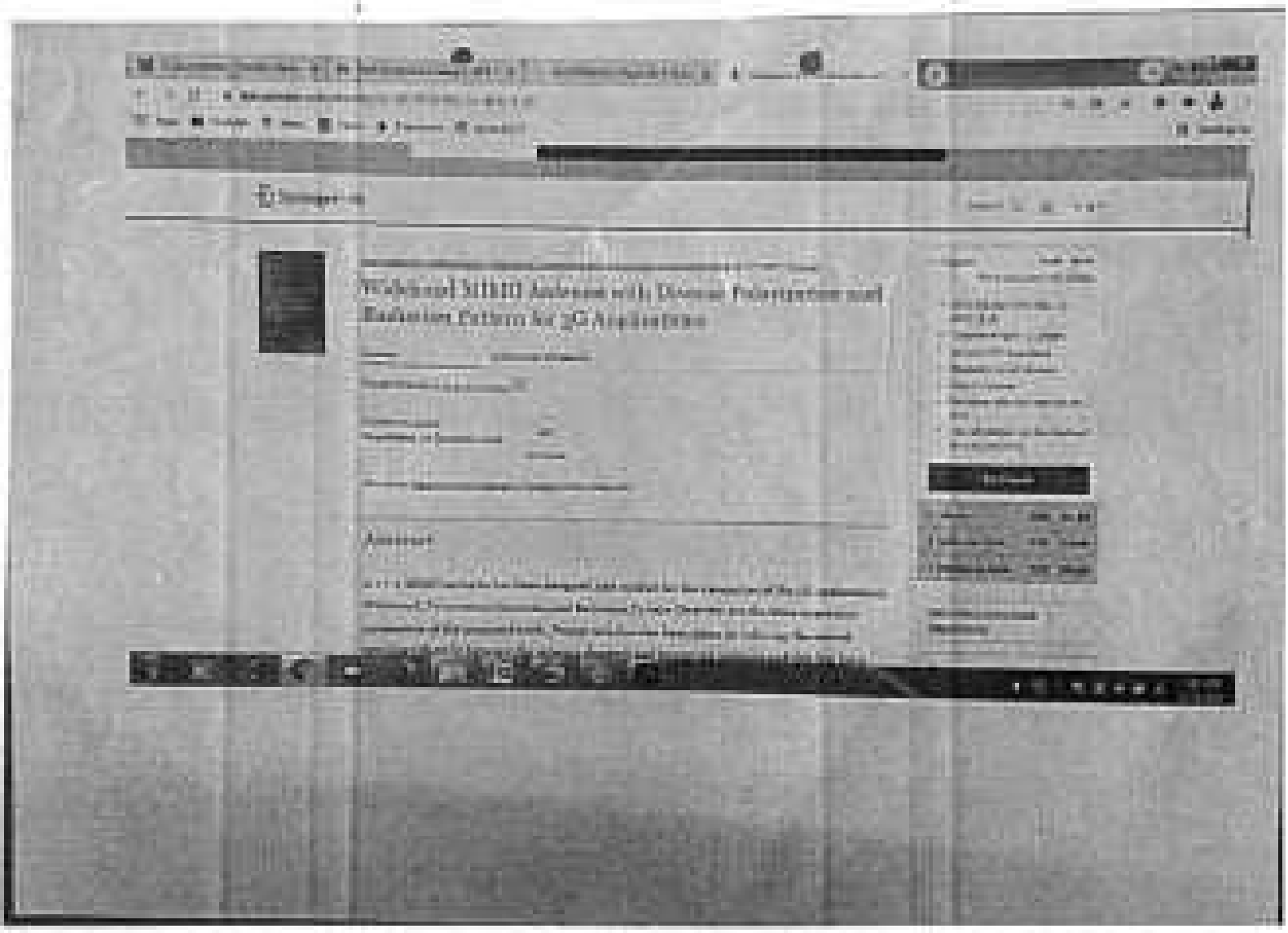

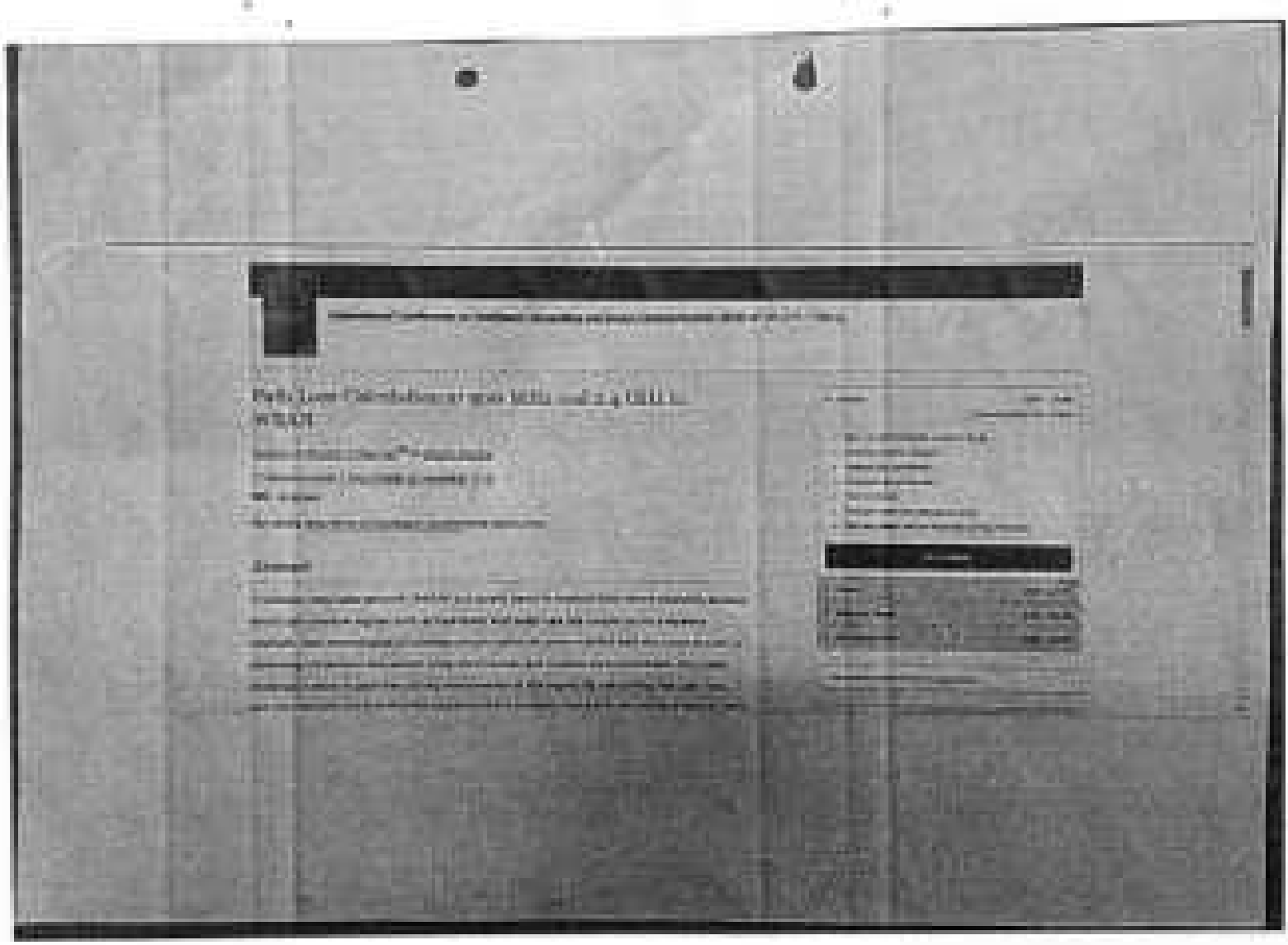

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A Triple band Microstrip Antenna with Enhanced Bandwidth for Radar Applications

K. Kasuna Kumari, M. Vinni Kumar

Abstract—Here in this paper a triple band microstrip antenna is proposed. The designed antenna is of compact structure with dimensions 35mm x 27mm x 1.6mm including ground plane which is fabricated using FR-4 substrate with dielectric constant of 4.4.This antenna has three resonant frequencies which are working at 6.4GHz with bandwidth of 1.1 GHz, second band working at 8.1 GHz with bandwidth of 280MHz, and third operating frequency is 9.4GHz with bandwidth of 750MHz. All the three obtained bands are providing large bandwidth which have wide range of applications. The other antenna parameters like return loss, directivity, gain, VSWR and current distribution are also obtained in this paper. The main purpose of this antenna was to provide a single antenna for multiple applications and with improved bandwidth for transferring large amounts of data. The designed antenna is suitable for industrial applications also as because of its compact structure and its wide range of applications like radar, communication satellites, communication, navigation and weight control etc.

Keywords—multiband antenna, Triple-band antenna, Defective Ground Structure.

I. INTRODUCTION

The term microwave is employed to explain magnetic attraction waves with wavelengths starting from 1cm to 1m. The corresponding frequency vary in three hundred MHz to 300 gigahertz. This spectrum is restricted and needs to be shared, thus the demand for top performance MWAntennas suitable in increasing that have high property and constant information measure is bit by bit increasing[1].In recent years, the shrinking of antennas has become additional and additional necessary thanks to the increasing demand for little antennas because the fast development in wireless communications[2].The advantages of microstrip antennas build them wel3-6]and in several wireless communication applications like satellite communication, measuring instrument, medical applications, aircraft, spacecraft, and missile applications et classical sins disadvantages of Microstrip antenna in shorter information measure, poor potency [3].

Thus, to improve the performance of microstrip antenna various techniques are used now a days one of which is DGS, in this we introduce some defects in ground plane accordingly on the shape and dimensions of the defect, the shielded current distribution in the ground plane is disturbed, resulting a controlled existence and propagation of the electromagnetic waves through the substrate layer [3].

Various feeding techniques square measure used for consolidation the magnetic attraction energy to a microstrip patch antenna, the task of feeding is incredibly necessary just in case of economical operation of antenna to enhance the antenna input electrical resistance matching [3]. the varied forms of feeding techniques square measure microstrip pricing operation, co-axial feed, aperture coupled feed, proximity feed. The feeding used here during this antenna structure is microstrip pricing operation during which a conducting strip is connected on to the sting of diverging patch. though many French microwave multiband antenna styles were projected [6],[7] they're either fed by microstrip lines [8],[7] or mini-coaxial cable [9].

This paper works for 3 bands with wide information measure applications below C band and X band. The antenna consists of 2 rectangular ring cuts of structures, and there r 2 slots loaded up in it. The resonant frequencies we tend to have gotten as as a result of these slots as by variable their length there'll be variation in operative frequencies. we've additionally introduced the defect in ground plane as reminiscence slot DGS technique the opposite antenna parameters were improved. The bandwidths measured here all follow the -10dB return back loss. The designed antenna is often used for radar, mobile applications, satellite applications, measuring instruments, military, radio management etc.

The paper is in organized in four sections which are as follow. As for section I have give a brief introduction of proposed antenna. Section II, basic design of antenna is described, and fabricated structure is also included in it. In Section III, the simulated and measured results of designed antenna are presented and finally, the paper is concluded in Section IV.

II.ANTENNA DESIGN

In this section the basic design of proposed antenna is included. It includes both simulated as well as fabricated structure is explained. Figure 1 shows the structure of microstrip antenna both fabricated and simulated. Table 1includes the dimensional parameters of antenna. For input two-dimensional multisector variety of feeding is employed. within the structure the empty aspect of feeding one rectangular ring is hooked up with that one slot is hooked up within. The antenna structure is intended exploitation Fr-4 substrate that have relative constant (εr=4.4). The variation in its operation frequency and in antenna parameters is discovered

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A Triple band Microstrip Antenna with Enhanced Bandwidth for Radar Applications

K. Kumara Kumari, M. Vinod Kumar

Abstract—Here in this paper a triple band microstrip antenna is proposed. The designed antenna is of compact structure with dimensions Plane x Plane x Plane including ground plane which is fabricated using FR-4 substrate with dielectric constant of 4.4.This antenna has three resonant frequencies which are resulting at 6.4GHz with bandwidth of 1.1 GHz second band resulting at 8.1 GHz with bandwidth of 200MHz, and third resonating frequency is 9.4GHz with bandwidth of 750MHz. All the band obtained here are providing large bandwidth which have wide range of applications. The other antenna parameters like return loss, directivity, gain, VSWR and current distribution are mentioned in this paper. The main purpose of this antenna was to provide a single antenna for multiple applications and with improved bandwidth for transferring large amount of data. This designed antenna is suitable for industrial applications also as because of its compact structure and for wide range of applications like radar, communication satellites, multifunction, navigation and traffic control etc.

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Design and Analysis of 2 X 4 Array Antenna With Single Slot For UWB Applications

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Abstract

This paper presents designing of the 2x4 array antenna with the ultra-wide band for the S, C, and X Bands respectively. The proposed antenna can be designed by using the eight rectangular patches by placing as a 2x4 array by using a FR4 material as a substrate. It was observed that the designed antenna has ultra-wide band i.e., 10.36 GHZ and improved gain 9.2dB. It was found that the designed antenna has a return loss of -34.7dB. The simulation can be done in the HFSS software.

Keywords: Array, ultra-wide band, HFSS, Return loss

I. INTRODUCTION

An Array antenna has become more popular from the last decade due to its compact size with the larger bandwidth and improved Gain over the normal antenna [1].Array antenna can be defined as a group of antennas in a rectangular structure to form a single antenna so that the radiations can directed in a particular direction & eliminated in unwanted directions [2].

Now-a-days microstrip patch antennas have numerous great purposes due some normal advantages such as a compact size, low profile and low simulation costs [3].

In the earlier designs they found that for a 2x4 patch antenna the gain is 9.2db for the impedance bandwidth is very low i.e., 800 MHZ [4]. For 3x3 antenna array of rectangular topology has the bandwidth is 1GHZ and Gain is1.72dB [5]. An author had investigated that E-shaped patch array antenna the bandwidth was 1.7GHZ and also they observed that their antenna has VSWR is1.32 [6].For the 2x4 antenna they found that the antenna can be operated in the multiband

II. Methodology:

It was observed that the radiation will be low for the single patch antenna and also the efficiency, Gain, Bandwidth is also low. Mainly for the single patch antenna SNR is also low and minor lobes effect is also high. But while the designing the array antenna size of the patch should also considered, because all the factors will be depend on the size of the patch as well as the substrate.

An antenna array can be defined as a group of antennas in a rectangular shape in a single antenna so that the radiations can be directed into single direction and also the side lobes radiation can be suppressed. In this paper the proposed antenna can be designed by 2x4 arrays by using a with the a, 4.4. The size of the each patch of the is (1.5mmx1.7mm. The designed antenna can be stable by using a line feeding technique.

III. Antenna Parameters

This paper mainly focuses on to design a rectangular shaped patch array antenna to attain the UWB. The compact largeness of the proposed aerial is 111x1.16x1.6mm.The height of the substrate is 1.6mm. The size of the each patch in the proposed antenna is (2.95x1)mm. The Geometrical view of the proposed antenna is show in below figure 1.

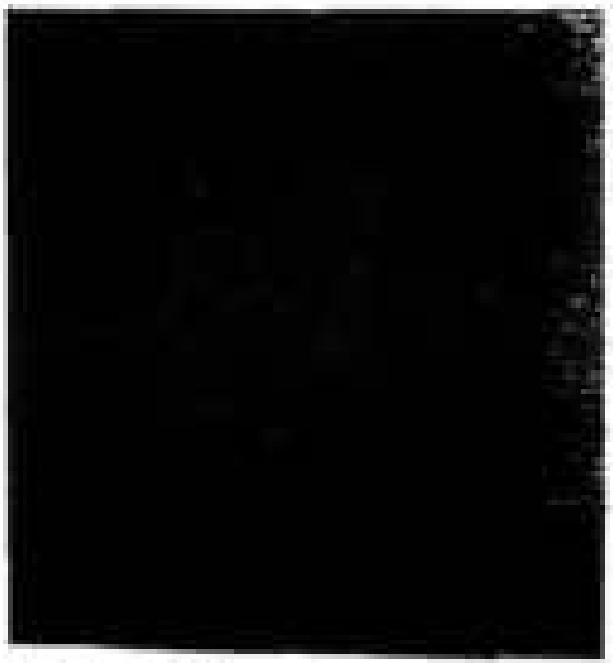

Fig 1. Plaial view of a proposed array antenna

In the above figure1 a slot had introduced on one of the patch in order to enhance the bandwidth of the proposed antenna. The fig 1 is a fourth iteration of the proposed antenna. The fig 2, fig 3, fig 4 shows the 1st, 2nd, 3rd iterations of the proposed antenna.

5

A Flag Shaped Microstrip Patch Antenna for Multiband Operation

Purnima K. Sharma[1], Dinesh Sharma[2], Ch. Jyotsna Rani[3]
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Abstract. A high-gain multiband flag shaped microstrip patch antenna is [illegible] developed in this paper. The shape of antenna is very simple. Its design with dimensions 2.5x1.9 cm on FR4 substrate [illegible] bandwidth. The designed antenna works in multiple frequency bands in C-band, X-band and Ku-band. [illegible] The experimental results indicates that the proposed antenna design, having 7.5 GHz, 9.7 GHz and wide band at 13.9 GHz used in different areas of communication. The designed antenna is [illegible] and successfully simulated using HFSS. The obtained results are compared and presented to demonstrate the performance of the designed antenna.

Keywords: HFSS, FR4 substrate, Return Loss, C, X and Ku band, VSWR.

1 Introduction and Literature Survey

Now-a-days wireless communication plays a vital role almost in all our daily needs. So antenna is important component for all wireless applications. An antenna is a passive device used to convert an RF signal, propagating on a conductor material, into an electromagnetic signal in free space. Reciprocity is the fundamental property of antenna. Due to this property antenna characteristics such as antenna gain, radiation pattern, frequency of operation, polarization are remains same whether the particular antenna is transmitting or receiving [1]. For long distance communication satellites are used in which most of the antennas are micro-strip patch antennas. Micro-strip patch antennas are used due to their compact size and high fidelity. A Micro strip antenna consists of copper patch mounted on a dielectric material and ground plane is connected to the feed line on the bottom side of the dielectric material.

Mr.S.Mari and Mr.Bily Gentili has designed the antenna of dual-frequency patch antennas that has been considered, with special emphasis on configurations that are particularly attractive for their simplicity and design flexibility[2].Mrs.Madouda designed an antenna and array of antenna at Ku band with gain of 6.8dB and 8.5dB [3].Mr Antara Ghosal designed an patch antenna which rejection bandwidth increased from 13.3% to 18.2%[4]. Mr.Sattapongbhibanwas designed an E-Shaped patch antenna working at Ka-Band which can be used for different applications [5]. Hasan Sabanar, Henry Surwandinnar and Jesus S.Jar, inclusion of holes (or gaps) in the conducting patch and

A Flag Shaped Microstrip Patch Antenna for Multiband Operation

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Abstract. A flag shaped microstrip patch antenna is designed and developed in this paper. The design is carried out for operation in the frequency range 2.3GHz to 12GHz. The designed antenna works in multiple frequency bands in L-band, S-band and Ku-band. The parametric study is also carried out and the optimized results for the proposed antenna design, having VSWR < 2 (2GHz, 4.7GHz and 6GHz) are used in different areas of communication. The fabricated antenna is successfully validated using IE3D. The obtained results are compared and it is observed that the performance of the proposed antenna

Keywords: IE3D, Microstrip Patch Antenna, L, S and Ku band, VSWR

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Dual band U slot Microstrip patch antenna for RF Energy Harvesting

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Abstract— The paper deals with design of a compact microstrip antenna (MSA) to receive the RF radiation at GSM 1800 and ISM band (2.4 GHz). Available RF energy in the ambient environment provides an opportunity to harvest the RF energy. Some of the most prominent sources are Cell Tower Transmission, Wi-Fi, mobile phones. In this work, a rectangular microstrip patch antenna with U-slot is printed on the FR4 substrate. It is fed by coaxial feeding. The parameters such as return loss (dB), gain(dB) and radiation patterns are analyzed using HFSS. It is inferred that the proposed antenna operates at desired dual frequency bands. A comparison of the performance of the antenna with RT duroid substrate material [12] is also done.

Keywords— Microstrip patch antenna; coaxial feed; Antenna for RF energy harvesting.

I.INTRODUCTION

Over the past two decades, wireless systems have been developed and implemented in such an extent that frequency spectrum has become dense. These systems are Wi-Fi, cellular radio, radio broadcast and TV broadcast. Recovering even a fraction of this energy would have a significant environmental and economical impact. This is where energy harvesting (EH) plays an important role. The method of extracting energy from environment to generate electricity is called energy harvesting or energy scavenging. Available RF energy in the ambient or areas close to transmission towers provides an opportunity to harvest that energy.

Some of the most prominent sources are FM radio systems (88-108 MHz, transmitted power few tens of KW), TV Transmission (180-220 MHz, transmitted power few tens of KW), Cell Tower Transmission (40 to 98 W per channel, 869-894MHz, 1.8GHz), AM Transmission (540-1640 kHz, transmitted power few hundred KW) and mobile phones (transmitted power 0W to 2W), etc. "ELECTRONICS is a multidisciplinary science that is used to convert electromagnetic energy into electrical energy. The components of the energy harvesting system are antenna, matching network and rectifier. Antenna is one of the most crucial components in RF energy harvesting system to receive maximum power.

II. DESIGN METHODOLOGY

IoT Based Smart Water Management System Using Long Range Communication

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Abstract—Internet of Things (IoT), which will create a huge network of billions or trillions of "Things" communicating with one another, are facing many technical and application challenges in developing of smart cities. In this paper, an effective monitoring and consumption of water is addressed by incorporating long range wireless communication technology in accordance with IoT. The NodeMCU module also known as long range wireless communication module can transmit the data to a distance of kilometers (even longer) using LoRa technology. This module is used to transmit the water level of the tank to the cloud through gateway. The water level data stored on cloud server is observed using smart mobile application and water motor is automatically switched on or off based on the required water level.

Keywords-Long Range Wireless Communication, LoRa, Sensor network nodes, Gateway, IoT, cloud, Smart mobiles.

I. INTRODUCTION

Water is an elixir of life and managing it is an important issue nowadays. According to the World Health Organization it has been reported that millions of people are unable to access safe drinking water. Global warming and extreme temperatures impact around the drinking water available on earth. Control and implementation of water management is a tool to improve with information and communications technology systems due to which the problems of water control arround. Like effluent distribution, consumption and maintenance in water management.

The Internet of Things (IoT) consists of sensors and networks and can be sensed as smart, programmable, self-configured & adaptive system interconnecting "all" things including every day and industrial objects, making it easy to connect with humans. The concept of IoT and its deployment is extended to all the fields or applications such as smart city, smart transportation systems, smart industries and many other systems.

A novel approach is proposed in this paper, based on IoT to understand and monitor water consumption. Sensors are installed on three water tanks and data acquisition is done using a controller. Finally transmitted to the cloud through gateway using long range wireless communication technology.

The paper is organized as, section II is survey on water monitoring systems developed, section III presents the design and development, the results are provided in section IV and conclusions are made in section V.

II. EXISTING METHODS

The Internet of Things is multi-disciplinary concept which is categorized into three levels called the technology level, communication level and intelligence level. In this section the works presented by various authors are discussed with respect to water management system.

[3] proposed Smart Campus and in this a mobile application was created to visualize all the details of water consumption in the campus. The data from these applications is uploaded on cloud through online server using Wi-Fi module.

Article [2] has proposed IoT based water flow control system as a part of water distribution in a Smart Campus using Raspberry Pi. Depending on the water level, the submersible pumps start and stop automatically and simultaneously upload the water level to the cloud.

Vaishali [1] has proposed Mobile integrated system using IoT for smart irrigation. In this Work, Matrix Controlled Smart Irrigation system is implemented with the help of Raspberry Pi. And the information of moisture and temperature sensor data is stored in Cloud. Using Data stored in cloud, an application is created to android mobile to interact with the system.

In paper [4], a system is developed which senses the water flow rate and temperature in household. The sensors are placed at various places in a house, and the data collected from these sensors is routed to a cloud via the Internet or Wi-Fi in a home.

A novel approach is proposed in this paper which mainly focuses on smart water management using long range communication technology.

III. DESIGN AND IMPLEMENTATION

The proposed water management system is shown in Figure 1. This system consists of three units i.e. the node unit, gateway unit and cloud. The node unit consists of Ultrasonic

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Abstract—Internet of Things (IoT), which will create a huge network of billions or trillions of "Things" communicating with one another, are facing many technical and application challenges in developing of smart cities. In this paper, an efficient monitoring and consumption of water is addressed by incorporating long range wireless communication technology in accordance with IoT. The Sub-GHz module also known as long range wireless communication module can transmit the data to a distance of 8-kilometers line-of-sight using LoRa modulation. This module is used to transmit the water level of the tank to the cloud through gateway. The water level data stored on cloud server is observed using smart mobile applications and water motor is automatically switched on or off based on the required water level.

Keywords-Long Range Wireless Communication, LoRa, Sensor network nodes, Gateway, IoT, cloud, Smart mobiles.

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Analysis of Three Port Circulator Using Artificial Neural Networks

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ABSTRACT

A Radio Frequency (RF) three port circulator is a non-reciprocal passive device, where transmission signal entering in any port only transmitting into next port in rotation. Such a basic three terminal network material or microwave waveform gate switching behaviors in which the high power signals to be directed and isolated [1]. It protects the microwave components from unwanted reflections. In most modern a wave can additionally be circulated may can be obtained from Faraday Magnetic Cell. Conventionally the RF circulator uses a very large Transistor like switching circuit network model, so the best alternative is to design a model with less computerizable cost. ANN can solve large variety of Radio Frequency and EMC related problems. The above network model is trained and tested for different ANN algorithms and compared the best performance comparisons. The simulation is designed using simulink model. In this paper proposed reverse models and forward reverse models are compared.

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1. Introduction

Ideally the circulator is a ferrite device having unidirectional behavior over the properties of ferromagnetic materials and controlling the interference of electromagnetic energy. Because of electromagnetic nature it allows the energy in one direction with very losses and absorb in the opposite direction. Fig 1. shows three port circulator. Usually the circulators are designed according to the reciprocal theory of Bosma [2] Actually, [illegible] and [illegible] [3]. The wide bandwidths can be easily obtainable for the circulators provided they are operated in large values of operating wavelength [4] [5] [6] and [7]. Nowadays [illegible] an Artificial Neural Network (ANN) is a computational model based on the structure and functions of biological neural networks.

Fig. 1 - Three port circulator

The structure of ANN is different to the field of microwaves because learning or training operations are depending on inputs and outputs of the neural network. These networks are mainly a repeated very nonlinear approximate interrelationships between input and output of the data obtained from various areas. Among them are wall area environment and EM problems. The issues related to this area is investigated. Even training the network using the data obtained from EM simulation software is time less hardware set up. If the results needs modify goals, the computational time is very longer as compared to EM simulation software. In this paper design and analysis of three port circulator using ANN forward and inverse models are presented also the performance of the neural models with different learning algorithms are investigated. A series of prototype with inverse neural models. The networking paper organized as Artificial Neural Modeling Technique consisting of forward and inverse inverse models, proposed reverse model for design of circulator.

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Prediction of crop production using adaboost regression method

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Abstract. Agricultural evaluations or forecast of yield creation is basic for some applications, for example, agrarian guarantee administration, development security, reviewing frameworks, maintenance exchange arrange. Machine learning has risen as an enormous information administering and material processing in recent time and, down to subsequent we existed science in the each development agriculture space. In this paper, we have explored and build a crop production prediction model using Decision Tree Classification and AdaBoost Regression Method. We have used the Indian Agricultural dataset. Performance analysis was done using R-squared score.

Keywords: AdaBoost, agriculture, crop production, regression, R-squared score

1. Introduction

Agriculture is the backbone of Indian economy. Agriculture area utilizes more than 50 for each penny of the aggregate workforce in India and contributes around 17.1 percent to the nation's Gross Domestic Product (GDP). Artificial Intelligence is an area of computer science that has the capability of machine to reproduce intellectual human behavior. Machine Learning is a scheme of Artificial Intelligence. In machine learning, we do not need to explicitly indicate the steps or conditions as in case of some programming applications. Regression is a technique to find the statistical relationship between two or more attributes associated with, and depends on, a change in one or more independent attributes.

Ensemble is the specialty of considering different set of learners together to improve the model prediction. Ensemble learning is a machine learning approach where numerous learners are prepared to take care of a same problem. Rather than customary machine learning approaches which attempt to take in one hypothesis from training data, ensemble techniques endeavor to build an arrangement of theories and join them for use.

Boosting is one kind of ensemble procedure which endeavors to distinguish a solid classifier from an arrangement of classifiers which are weak. The different types of boosting algorithms are:

- AdaBoost (Adaptive Boosting)
- Gradient Boosting
- XGBoost
-

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Prediction of crop production using adaboost regression method

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Abstract Statistical evaluations of factors of yield creation is basis for some applications, for example, agrarian property allotment, investment security assessing framework, assessment exchange strategy. Machine learning has been with enormous alternative advancements and improve processing to make new open doors for advancing socialized science in the non-disciplinary agricultural space. In this paper, we have applied and build a crop production prediction model using Decision Tree Classification and Adaboost Regression Method. We have used the Indian Agriculture dataset. Performance analysis was done using R squared score.

Keywords Adaboost, agriculture, crop production, regression, R squared score

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Agriculture is the backbone of Indian economy. Agriculture area utilizes more than 70 the each penny of the aggregate workforce in India and contributes around 17-18 percent to the nation's Gross Domestic Product (GDP). Artificial Intelligence is an area of computer science, it has the capability of machine to reproduce intellectual human behavior. Machine Learning is a subarea of Artificial Intelligence. In machine learning, we do not need to explicitly indicate the steps or conditions as in case of some programming applications. Regression is a technique to find the statistical relationship between two or more attributes associated with, and depends on, a change in one or more independent attributes.

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Prediction of crop production using adaboost regression method

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Abstract. Territorial evaluations or forecast of yield creation is basis for some applications, for example, agrarian grounds administration, establishment security cautioning framework, maintenance exchange strategy. Machine learning has risen with enormous information advancements and superior processing to make new open doors for information escalated science in the multi-disciplinary agricultural space. In this paper, we have applied and build a crop production prediction model using Decision Tree Classification and AdaBoost Regression Method. We have used the Indian Agriculture dataset. Performance analysis was done using R-squared Score.

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Attainment of Course Outcomes by using Python tool for Outcome based Education (APTOBE)

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Abstract— Course Outcomes (COs) plays an important role in Outcome-Based Education (OBE). The attainment of Program Outcomes (POs) is depends on the attainment of Course Outcomes (COs). In this paper, we have measured the CO attainment for specific course on the basis of various tools such as direct and indirect method in which student's internal and external examination marks and feedback from Course End Survey have been considered as an input data. The total attainment process has been implemented by using Python Tool.

Keywords-Course Outcomes (COs), National Board of Accreditation (NBA), Outcome-Based Education (OBE), Program Outcomes (POs).

INTRODUCTION

Outcome-Based Education (OBE) is already adopted, in engineering education system, from last few years along with National Board of Accreditation (NBA) [1][2][7].

The attainment level of course outcome may vary with different courses but at least 50% attainment is mandatory for all courses. In our institute, we have expected that target up to 60%. In this paper we have given detail explanation for evaluation of CO attainment. Total Assessment is calculated by using Python Tool [1].This tool assists faculty to construct queries based on the structure of Blooms Taxonomy. It also addresses the respective course outcomes and program outcomes. This tool generates reports depicting the query density on course and program outcomes. The systematic approach adopted in this tool, has improved faculty alertness in designing relatively good questions.

Here we have selected "Object Oriented Programming through C++" course of first year B.Tech students of Computer Science Engineering.

There are 12 Program Outcomes (POs) developed at department level and six course outcomes (COs) for each subject. Further we have described attainment of CO using both direct and indirect methods in brief. Six course outcomes specified for Object Oriented Programming through C++ course i.e. it is expected that, after completing this course successfully, students must be able to

CO1. Describe the Basics of Object Oriented Programming, C++ programming and I/O in C++ (K2- Comprehension)

CO2. Interpret the Basic Concepts in C++ Programming, Constructors, Destructors (K2-Comprehension)

CO3. Prepare programs using (Functions, Overloading and Inheritance, Type Conversion (K3-Application)

CO4. Explain the functionality of Virtual functions and Pointers. (K2-Comprehension)

CO5.Infer File Operations, Generic Programming, Templates and Exception Handling.(K2-comprehension)

CO6. Predict Programming and Standard Template Library Model. (K3-Application)

BACKGROUND

The Total Assessment process in OBE [3] is based on Direct and In-Direct Assessment. Direct Assessment Measurement is based on Internal, External ,On-Line Quiz Examinations and Assignment Marks for the corresponding Subjects. In-Direct Assessment Measurement is based on Course End Survey which has been taken from Students based on some sample questionnaire on the corresponding Subject.

DIRECT METHOD:

PROGRAM OUTCOMES (POs):

Computer Science Engineering Graduates will be able to:

- PO1: Engineering knowledge: Apply the knowledge of Mathematics, Science, Engineering Fundamentals and Concepts of Computer Science engineering to the solution of complex engineering problems.
- PO2: Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using