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3.3.3. Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during year

3.3.3.1. Total number of books and chapters in edited volumes/books published and papers in national/ international conference proceedings year wise during year.

Aditya College of Engineering encourages the staff members in writing books and chapters in edited volumes/books published and papers in national/ international conference proceedings. The institute provides all the necessary facilities and also rewards the faculty member for publishing papers in various indexed journals.

Year	2021-2022
Number of Research Papers	29

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3.3.2 Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during last five year

Sl. No.	Name of the teacher	Title of the book/chapters published	Title of the paper	Title of the proceedings of the conference	Name of the conference	National / International	Year of publication	ISBN number of the proceeding	Affiliating Institute at the time of publication	Name of the publisher
1	Dr.M.Ravindra, Mr.K.Manoz Kumar Reddy, Mr.D.Tata Rao	Power Congestion Management in Transmission Network using FACTS device: A MATLAB/Simulation Study				International	2022	978-613-8-96926-6	ACOE	SCHOLARS' PRESS
2	Dr.M.Ravindra, Dr.A.Ramesh	A Simplified Model of Micro Grid Connected with PV System: study for 24 hours of a typical day				International	2022	978-620-4-74088-1	ACOE	LAP LAMBERT ACADEMIC PUBLISHING
3	Dr.M.Ravindra	State estimation solution with optimal allocation of PMU devices: In large scale power system networks				International	2022	978-620-4-74078-2	ACOE	LAP LAMBERT ACADEMIC PUBLISHING
4	Dr.A.S.Veerendra	Sensitivity based Allocation of FACTS devices in a Transmission system considering Differential Analysis		Proceedings of the International Conference on Artificial Intelligence Techniques for Electrical Engineering Systems (AITEES 2022)	International Conference on Artificial Intelligence Techniques for Electrical Engineering Systems (AITEES 2022)	International	2022	978-94-6463-074-9_6	ACOE	ATLANTIS PRESS. SPRINGER
5	Mrs.K.Lakshmi	Modelling in Simulation of Hybrid Boosting Converter for Fuel Cell Applications		Proceedings of the International Conference on Artificial Intelligence	International Conference on Artificial Intelligence Techniques for	International	2022	978-94-6463-074-9_5	ACOE	ATLANTIS PRESS. SPRINGER

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Sl. No.	Name of the teacher	Title of the book/chapters published	Title of the paper	Title of the proceedings of the conference	Name of the conference	National / International	Year of publication	ISBN number of the proceeding	Affiliating Institute at the time of publication	Name of the publisher
				Techniques for Electrical Engineering Systems (AITEES 2022)	Electrical Engineering Systems (AITEES 2022)					
6	Mr.D.Tata Rao	Optimal Allocation of Micro-phasor Measurement Units in Distribution Network Considering Security Constraints		Lecture notes in Electrical Engineering, Advances in communication, Devices and Networking, Proceedings of ICCDN 2021	ICCDN 2021	International	2022	978-981-19-2004-2_55	ACOE	SPRINGER
7	Dr.A. Ramesh		Study of different techniques to mitigate temporary overvoltage in photovoltaic system	Materials Today Proceedings	First International Conference on Design and Materials (ICDM)-2021	International	2021	2214-7853	ACOE	ELSEVIER
8	Dr.A.Ramesh		Circuit analysis and modelling of dual active bridge bidirectional converter	Materials Today Proceedings	First International Conference on Design and Materials (ICDM)-2021	International	2021	2214-7853	ACOE	ELSEVIER
9	Dr.M.Ravindra		Design of sliding mode controller for induction motor drive	Materials Today Proceedings	First International Conference on Design and Materials (ICDM)-2021	International	2021	2214-7853	ACOE	ELSEVIER
10	Mrs.T.Himaja		Design and Analysis of AC-DC Power Factor		2021 6th International Conference for	International	2021	978-1-7281-8876-8	ACOE	IEEE

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Sl. No.	Name of the teacher	Title of the book/chapters published	Title of the paper	Title of the proceedings of the conference	Name of the conference	National / International	Year of publication	ISBN number of the proceeding	Affiliating Institute at the time of publication	Name of the publisher
			Correction Converter		Convergence in Technology (I2CT)					
11	Mrs.T.Himaja		Study of soft-starter based Induction generator for Wind Energy Conversion system		2021 Asian Conference on Innovation in Technology (ASIANCON)	International	2021	978-1-7281-8402-9	ACOE	IEEE
12	Dr. DVSSSV Prasad		Effect of parameters and surface analysis on eglin steel by shot blasting method	Materials Today: Proceedings	2nd International Conference on Sustainable Materials, Manufacturing and Renewable Technologies 2022	International	2022	2214-7853	ACOE	ELSEVIER
13	Dr. DVSSSV Prasad	A numerical approach to find distinct mechanisms of a planar kinematic chain using linkage coordinates		Lecture Notes in Mechanical Engineering (LNME)	EMSME: International Conference on Energy, Materials Sciences & Mechanical Engineering	International	2022	978-981-16-2794-1	ACOE	SPRINGER
14	Dr.B. MarximRahula Bharathi		Analysis of wear behavior and shear properties of nano–ZnO2/jute fiber/epoxy composites by Hand layup technique	Materials Today: Proceedings	International Conference on Newer Engineering Concepts and Technology (ICONNECT 2022)	International	2022	2214-7853	ACOE	ELSEVIER
15	Dr. Bhanu Teja Nalla		Performance analysis of	Materials Today: Proceedings	International Conference on	International	2021	2214-7853	ACOE	ELSEVIER

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Sl. No.	Name of the teacher	Title of the book/chapters published	Title of the paper	Title of the proceedings of the conference	Name of the conference	National / International	Year of publication	ISBN number of the proceeding	Affiliating Institute at the time of publication	Name of the publisher
			mineral oil-based nano-lubricants with Sulphur impregnated reduced graphene oxide nanosheets		Emerging Trends in Materials Science, Technology and Engineering (ICMSTE 2K21)					
16	Dr. DVSSSV Prasad	Applications of 3D Printing Technology	-	-	-	National	2022	978-93-5625-479-4	ACOE	SCIENTIFIC INTERNATIONAL PUBLISHING HOUSE
17	G. Veerapandu	Forest fire detection using satellite images		Smart Innovation, Systems and Technologies	Proceeding of Second International Conference in Mechanical and Energy Technology	International	2022	978-981-19-0108-9	ACOE	SPRINGER
18	G.Jaffino	Contour and texture based approaches for dental radiographic and photographic images in forensic identification		Advances in communications, signal processing and vlsi	IC2SV2019	International	2022	978-981-33-4058-9	ACOE	SPRINGER
19	Dr. Pullela SVVSR Kumar	OXGBoost: An Optimized etreme Gradient Boosting Algorithm for Classificatio n of Breast Cancer		Lecture Notes in Electrical Engineering book series	3rd International Conference on Machine Intelligence & Signal Processing	International	2022	1876-1100	ACOE	SPRINGER
20	Dr.B.Annapurna	Portable Stress Measurement and Analysis System (PSMAS) : The Correlation of Body and Mind Analysis using GSR Sensor		Lecture Notes in Electrical Engineering	International Conference on Emerging Electronics and Automation	International	2022	978-981-19-4300-3	ACOE	SPRINGER

Sl. No.	Name of the teacher	Title of the book/chapters published	Title of the paper	Title of the proceedings of the conference	Name of the conference	National / International	Year of publication	ISBN number of the proceeding	Affiliating Institute at the time of publication	Name of the publisher
21	Dr. GSN Murthy		Cyber-Attack Prediction in Virtual IoT Using Leveraging Mechanism	Proceedings of the Third International Conference on Smart Electronics and Communication (ICOSEC 2022)	International Conference on Smart Electronics and Communication (ICOSEC 2022)	International	2022	979-1-6654-9763-3	ACOE	IEEE
22	Dr.G.S.N. Murthy	Machine Learning: Principles & Applications				International	2022	978-920-5-20215-9	ACOE	PRINCETON PRESS - PUBLISHING COMPANY
23	Dr.B.Kiran Kumar	Computer Networks				International	2022	978-93-92922-83-4	ACOE	SCIENTIFIC INTERNATIONAL PUBLISHING HOUSE
24	T.Veerraju		ML and IoT-based Soil Type Analysis and Prediction System	Proceedings of the Third International Conference on Smart Electronics and Communication (ICOSEC 2022)	International Conference on Smart Electronics and Communication (ICOSEC 2022)	International	2022	978-1-6654-9764-0	ACOE	IEEE
25	Dr. Pullela SVVSR Kumar		IoT based Patients Monitoring System in Healthcare Service	Proceedings of the International Conference on Automation, Computing and Renewable Systems (ICACRS 2022)	International Conference on Automation, Computing and Renewable Systems (ICACRS 2022)	International	2022	978-1-6654-6083-5	ACOE	IEEE
26	Dr. Pullela SVVSR Kumar		Promegranate Quality Analysis and Classification Using Feature Extraction and Machine Learing.	Proceedings of the International Conference on Electronics, Communicati on and Aerospace Technology (ICECA 2022)	International Conference on Electronics, Communicati on and Aerospace Technology (ICECA 2022)	International	2022	978-1-6654-8270-7	ACOE	IEEE
27	B. Jyothi		Review of Thin film Deposition and Techniques	Materials Today Proceedings	2nd International Conference on Multifunctional Materials	International	2022	2214-7853	ACOE	ELSEVIET

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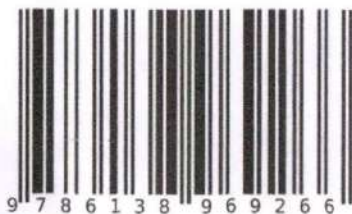| Sl. No.	Name of the teacher	Title of the book/chapters published	Title of the paper	Title of the proceedings of the conference	Name of the conference	National / International	Year of publication	ISBN number of the proceeding	Affiliating Institute at the time of publication	Name of the publisher
28	B. Jyothi		Role of crystal growth in Functionality of 3-D Electronics	Proceedings of National conference on Innovation in Sciencec and Technology (NCIST-2021)	National conference on Innovation in Sciencec and Technology (NCIST-2021)	National	2021	–	ACOE	SVCET
29	B. Jyothi		Beneficial role of carbon nanotubes in nano-optics and nano-photonics	Proceedings of 2nd International Conference on Engineering and Advancement in Technology (ICEAT 2021)	2nd International Conference on Engineering and Advancement in Technology (ICEAT 2021)	International	2021	978-93-5406-579-8	ACOE	OSIET

PRINCIPAL

Power Congestion Management in Transmission Network using FACTS device

This work presents the power flow control in the transmission network using a new FACTS device, i.e., Unified Power Flow Controller (UPFC) to relieve power congestion on the grid. The active and reactive power flows of all the buses are shown before and after the installation of UPFC. UPFC is one of the most promising FACTS devices to power flow control and enhances stability. This work describes the effect of UPFC to enhance dynamic stability reducing congestion problems in power systems. UPFC can improve power system dynamic performance through its supplementary control. Different simulations are carried out in the Matlab Simulink environment.

Dr. M. Ravindra is an Assistant Professor in the Department of Electrical and Electronics Engineering at Aditya College of Engineering, ADB Road, Surampalem, A.P. India. His areas of interest include power system state estimation, power systems operation, and control and electric power distribution systems.

Ravindra Manam
Manoz Kumar Reddy K.
Tata Rao Donepudi

Power Congestion Management in Transmission Network using FACTS device

A MATLAB/Simulation Study

This Book presented the modeling and simulation of a Photo Voltaic System (PVS) and battery connected to load in a micro-grid system using the lookup table method. Two lookup tables are modeled for the photovoltaic system and load connected. Power flow in a photovoltaic system, battery, and load connected are shown for 24 hours during a typical day. Island mode operation is made possible through the process by considering PV and Battery i.e., without depending upon the grid power system. Battery Storage is controlled using the proposed control strategy to optimize power flow during peak load or short circuit conditions. State of Charge (SOC) during 24 hours of time shows the effectiveness of the proposed control strategy for the battery.
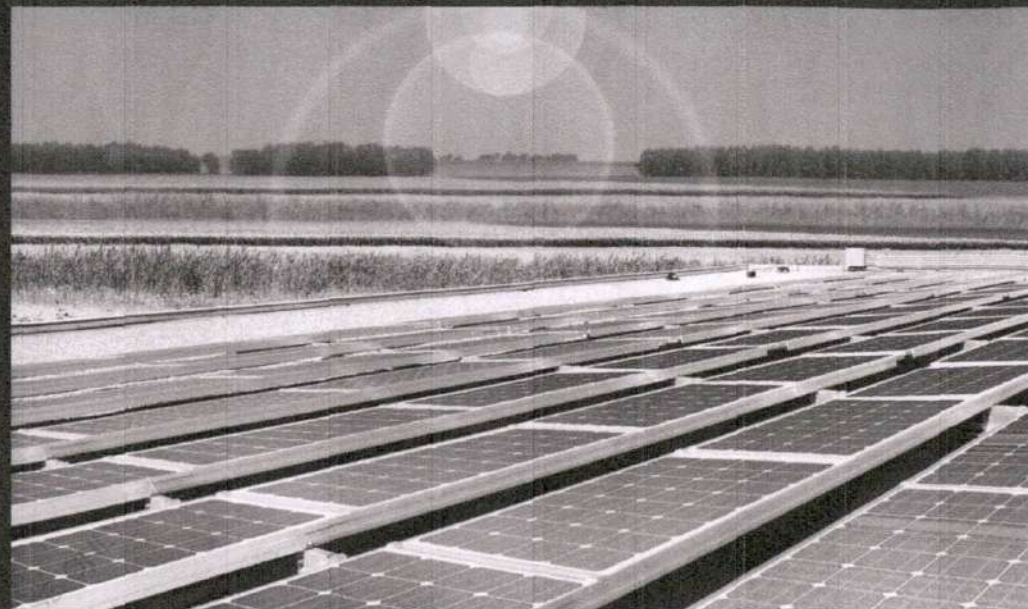
Ravindra Manam
Ramesh Adireddy

Ravindra Manam He is an Associate Professor in the Electrical and Electronics Engineering department at Aditya College of Engineering, Surampalem, Andhra Pradesh India. He received Ph.D. degree in Electrical and Electronics Engineering from JNTUK Kakinada in 2018. His areas of interest include Smart Grid, Micro Grid.

A Simplified Model of Micro Grid Connected with PV System

study for 24 hours of a typical day

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Academic Publishing

This textbook explains different strategies for PMU placement to attain complete observability of the transmission network. The present SCADA system is venerable to load changes, With the allocation of PMU devices in the Transmission network, the dynamic state of the system can be estimated through proper state estimation procedure. Different State estimation Procedures, with PMU devices and without PMU devices are discussed here. Bad data detection techniques are shown here to identify the measurement errors in case of line outages.

State Estimation Solution
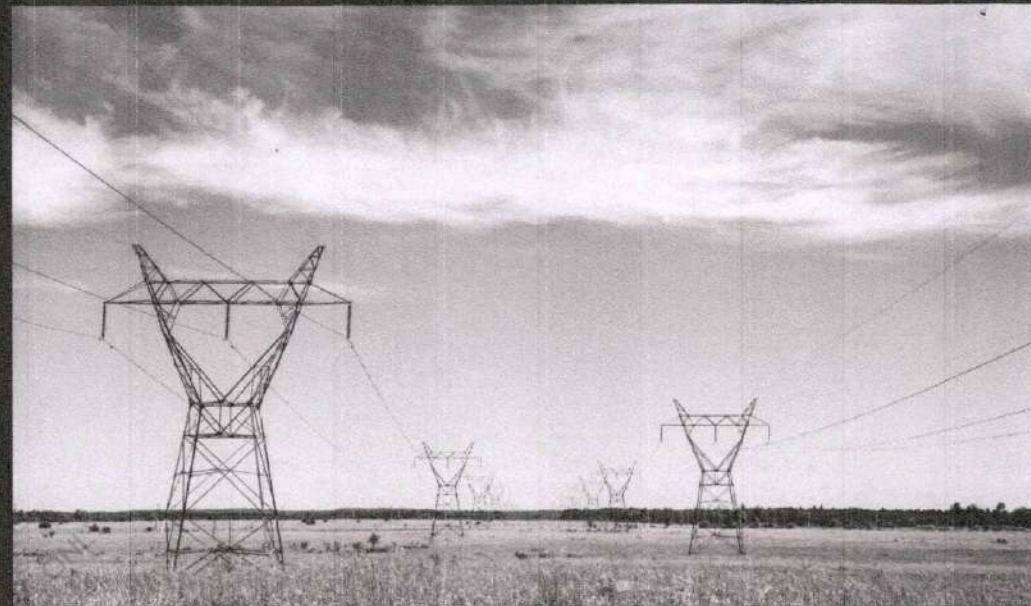
Ravindra Manam
Srinivasa Rao Rayapudi

Ravindra Manam
He is an Associate Professor in the Electrical and Electronics Engineering department at Aditya College of Engineering, Surampalem, Andhra Pradesh India. He received Ph.D. degree in Electrical and Electronics Engineering from JNTUK Kakinada in 2018. His areas of interest include Power System State Estimation, PSOC etc.

State Estimation Solution With Optimal Allocation of PMU devices

In Large Scale Power System Networks

Ravindra Manam, Srinivasa Rao Rayapudi

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Sensitivity Based Allocation of FACTS Devices in a Transmission System Considering Differential Analysis

V. Srinivasa Rao[1,2], M. Ravindra[2,3(✉)], A. S. Veerendra[2,3], R. Srinivasa Rao[2,4], A. Ramesh[2,3], and K. Manoz Kumar Reddy[2,3]

[1] Department of Electrical and Electronics Engineering, Aditya Engineering College (A), Surampalem, India
[2] Jawaharalal Nehru Technological University Kakinada, Kakinada, India
connectvsr@gmail.com
[3] Department of Electrical and Electronics Engineering, Aditya College of Engineering, Surampalem, India
[4] Department of Electrical and Electronics Engineering, University College of Engineering Kakinada, JNTUK, Kakinada, India

Abstract. This research proposes a differential analysis for determining the suitable location for FACTS devices (TCSC) and TCPAR to enhance network security during single-line outages (N-1). To ensure optimal device deployment when dealing with sensitivity variables, the proposed technique is based on performance index (PI) and ranking index (RI). The severity of the line in the network is ranked by the contingency case. The system loading level for a specific outage is computed using RI. Differentiating the proposed performance index (PI) applied to system parameters of TCSC and TCPAR yields sensitivity factors. The sensitivity factors determined by RI are utilized to determine best placement of TCSC and TCPAR devices. The goal of this problem is to reduce line overloads on transmission lines in the event of a network outage. The proposed technique is tested in a MATLAB environment on IEEE 5 bus and 14 bus networks.

Keywords: TCSC · TCPAR · performance index · sensitivity approach · differential analysis

1 Introduction

Power system is large integrated set with several devices and different types of equipment located at various places via transmission lines, such as generators and transformers. Any outage of these cables can affect system reliability, hence security of this equipment is critical. As complexity of operating system grows, devices are necessary to operate systems at close to confined limitations. Without rescheduling generating or making network improvements, Power Flow (PF) regulation in a network can significantly improve system performance. As a result, it is possible to use FACTS in a network to enhance power system's steady-state security [1]. FACTS can change line flows in process to
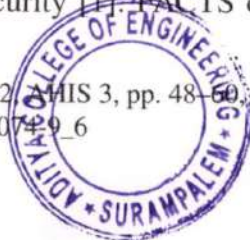
Modelling and Simulation of Hybrid Boosting Converter for Fuel Cell Applications

A. S. Veerendra[1,2(✉)], K. Lakshmi[1,2], A. Ramesh[1,2], Ch. Punya Sekhar[3], U. P. Kumar Chaturvedula[1,2], M. Ravindra[1,2], and D. Tata Rao[1,2]

[1] Department of Electrical and Electronics Engineering, Aditya College of Engineering, Surampalem, India
veerendraump@gmail.com
[2] Jawaharlal Nehru Technological University Kakinada, East Godavari District, Kakinada, India
[3] Electrical and Electronics Engineering, Acharya Nagarjuna University, Guntur, India

Abstract. It is appropriate to focus on sustainable energy vehicles, with an intention to meet the 2050 target of an 80% reduction in greenhouse gas emissions. Fuel cells (FCs) are the only acceptable source of efficiency available in vehicles from renewable sources. Moreover, the voltage of the FC is very low to match the DC bus, which is, used to drive the motor inverter. Hence to enhance the response of the FC and to afford the desired voltage of the motor inverter, a hybrid boost converter (HBC) is suggested to give the required voltage response, as well as reduce the component stress and achieve a low output ripple. The novel topology is modeled and evaluated by using MATLAB/Simulink Software.

Keywords: hybrid boosting converter (HBC) · Sustainable energy · Fuel cell · DC-DC converter

1 Introduction

High gain dc-dc converters are the key component of the renewable energy based applications [1, 2]. Figure 1 indicates an example where the high-level converter can be used in the energy conversion phase in two phases of the system [3]. Among the various types of dc-dc converters, the non-isolated converters achieve high voltage gain than the isolated converters due to its reduced switching losses, conduction losses and absence of the transformer [4–6]. Ilango et al. [7], suggested a cascaded boost converter with high voltage and efficiency. Nonetheless, this topology has a major drawback of high cost and complexity in controller owing to the use of multiple converters. Starzyk et al. [8], proposed a dc-dc converter based on voltage multipliers. The major drawback of this topology are high conductive losses and requirement of high duty cycle. Chen et al. [9] and Muhammad et al. [10], discussed the topologies based on coupled inductors. However, these topologies needs high voltage switches and anguish from EMI problems.

Cao et al. [11], proposed a topology based on switched-capacitor for increasing the pulsating current. Nonetheless, this topology suffers with regulation problems. Zhang et al. [12], suggested a topology with a single switch for enhancing the voltage gain.

Optimal Allocation of Micro-phasor Measurement Units in Distribution Network Considering Security Constraints

Manam Ravindra, Donepudi Tata Rao, Rayapudi Srinivasa Rao, Adireddy Ramesh, and Karri Manoz Kumar Reddy

Abstract This paper presents optimal allocation of Micro-Phasor Measurement Units (M-PMU) in distribution network using Binary Integer Linear Programming (BILP) method considering security constraints. Placement of PMUs at every node of feeder network is infeasible as it is highly economical. So, to minimize the number of M-PMU's and to locate at optimal places, observability constraints are considered in one case, and allocation of M-PMUs at critical nodes in priority is considered in another case as security constraints. M-PMU allocation in case of single line outage or PMU loss is formulated. A node observability index (NOI) is proposed to check the observability of every node in the network. Complete feeder network observability (CFNO) is proposed to check performance of observability of complete network. MATLAB simulations are considered for IEEE-13, 33, 37, 69 feeder network, and obtained results are compared with standard methods to show its efficacy.

Keywords Critical nodes · M-PMU · Observability · Security constraints

1 Introduction

Today, Phasor Measurement Units (PMUs) are almost used for complete observability of transmission system. When transmission system and distribution system are compared, voltage angle variation between buses on a distribution system will be lesser in magnitude than that on transmission system [1]. Errors, like instrumental errors and white noise, affect the distribution measurements compared to transmission system. These Micro-Phasor Measurement Units (M-PMU) considered in this paper can be produced at cheaper cost, than current commercial PMUs used transmission network [2]. As these M-PMUs are cheaper compared to commercial PMUs, these could be deployed and bring a much higher resolution to the distribution grid

M. Ravindra (✉) · D. Tata Rao · A. Ramesh · K. Manoz Kumar Reddy
Aditya College of Engineering, Surampalem, India
e-mail: ravieeejntu@gmail.com

R. Srinivasa Rao
Jawaharlal Nehru Technological University, Kakinada, India

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Study of different techniques to mitigate temporary overvoltage in photovoltaic system

Ramesh Adireddy, Boddu Sai Deepak, M. Ravindra, K.V.S. Ramachandra Murthy

Department of Electrical and Electronics Engineering, Aditya College of Engineering, Surampalem, A. P., India

ARTICLE INFO

ABSTRACT

This paper investigates the cause of temporary overvoltage in PV system and different ways to mitigate them. Temporary overvoltage is an undesired phenomenon in distributed generation system which needs to be eliminated using different transformer configuration and grounding banks. This paper illustrates the principles of transformer configuration for mitigation of temporary overvoltage in PV system.
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1. Introduction

Integrating renewable energy sources to utility grid is one of the most challenging tasks as several factors need to be considered. PV system are connected to inverter and the inverter is connected to the grid via step up transformer. There is multiple international standard which specify the standards of interconnection. Validation of such standards for PV system has been discussed in [3]. Fig. 1 provides a schematic diagram of interconnection of PV system with grid where different protection aspects such as fault protection, islanding protection, generator protection and power flow protection are given importance. Different local loads and DG sources are connected to the feeder.

Temporary overvoltage (TOV) which is a oscillatory overvoltage persisting for many cycles is one of the unwanted and destructive effect which effects on the consumer load, equipment and distributed generation (DG) systems. There are different causes of TOV such as rise in ground potential, displacement of neutral voltage, inductive coupling of fault current, over modulation of inverter, lightning strike, ground fault, switching events and series resonance. Renewable system connected with grid are termed as DG system and TOV has severe impact on DG. In a DG system, TOV can be caused by asymmetrical AC faults as well as unintentional islanding incident. Therefore, different control schemes to limit TOV has been discussed in literature. Apart from the control aspects of limiting TOV there are other aspects to mitigate TOV by the use of different electrical components such as transformers, grounding banks etc. Effect of different transformer configuration for grounding purpose of distributed generator has been discussed in [1]. In [2], the authors proposed a control mechanism to mitigate temporary overvoltage for grid connected PV system with current source inverter. Smart PV inverter is used as a suppressor of TOV phenomena for distribution system in [4]. Different techniques for transient overvoltage suppression for distributed generation system has been discussed in [5]. Protection and grounding strategy for grounding for inverter based distributed generation system has been provided in [6].

This paper provides an overview of different techniques of grounding of PV system. Different IEEE standard for grounding has been discussed. Mitigation of TOV using different transformer configuration has been discussed in this paper.

2. Grid integrated PV system

Fig. 2 illustrates the grid integration scheme of PV system where multiple converters are used to extract power from PV panel and transfer it to the grid.

For harnessing maximum power from PV panel, maximum power point tracking scheme is used along with a voltage regulator and pulse width modulator. For grid synchronization, phase locked loop are used and for inverter control, dual-loop control technique involving voltage and current loop are used. Apart from the power converter and controller, grid-integrated PV system requires proper grounding and protection mechanism.
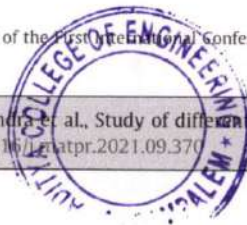
E-mail addresses: principal@acoe.edu.in (R. Adireddy), murthy.kvs@aec.edu.in (K.V.S. Ramachandra Murthy)

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Circuit analysis and modelling of dual active bridge bidirectional converter

Ramesh Adireddy [a], K.N.G. Arun Pratap [a], Tata Himaja [a], K.V.S. Ramachandra Murthy [b,*]

[a] Department of Electrical and Electronics Engineering, Aditya College of Engineering, Surampalem, AP, India
[b] Department of Electrical and Electronics Engineering, Aditya Engineering College, Surampalem, AP, India

ARTICLE INFO

ABSTRACT

This work illustrates a detailed circuit analysis and related simulation of dual active bridge bidirectional converter. The dual active bidirectional converter is used in many industrial applications such as hybrid electric vehicle, interfacing energy storage devices on distributed generation system etc. Detailed circuit analysis of the converter is one of the most challenging work and this paper addresses the same with adequate analysis and simulation results.
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Selection and peer-review under responsibility of the scientific committee of the First International Conference on Design and Materials (ICDM)-2021

1. Introduction

DC-DC converter finds widespread use in different applications. There are different topologies of DC-DC converter which has been reviewed in [1]. Dual active bridge (DAB) converter is one of the new topologies which provides bidirectional power conversion with galvanic isolation. DAB converter utilizes the energy of leakage inductance of high frequency transformer to transfer power. There are two different type of DAB such as current fed DAB and voltage fed DAB. The modulation of DAB has 3 degree of freedom i.e. primary voltage, secondary voltage and phase shift between both the bridges. Pulse width modulation (PWM) and phase shift modulation (PSM) are different modulation techniques for DAB converter [7–8]. A comparative analysis of single and three-phase dual active bridge converter has been discussed in [2,5]. Continuous time control of dual active bridge converter has been discussed in [3,4]. One of the limitations of DAB converter is circulation power flow and techniques to mitigate circulation power flow has been discussed in [6]. Different modulation techniques such as pulse width modulation and phase shift modulation have been used in dual active bridge power converter and detailed analysis can be found in [7–8,12]. State space model of DAB converter is presented in [9,10]. Control techniques of DAB converter has been presented in [11]. DAB converter derived switched capacitor converter has been discussed in [13].

This paper provides circuit analysis of dual active bridge converter and its related simulations. Complete analysis and sizing as well as rating of the converter has been discussed in this paper.

Section II provides the circuit operation of dual active bridge converter, Section III provides simulation results and Section IV provides concluding remarks.

2. Dual active bridge converter

Fig. 1 illustrates the circuit diagram of dual active bridge bidirectional converter which comprises of two different bridges of 4 switches each, high-frequency transformer, energy transfer inductor, dc-link capacitor and load. The switches of the bridges are accompanied by anti-parallel diode and snubber capacitor. The snubber capacitor is used to allow zero voltage switching operation or soft switching operation. Fig. 2 provides the circuit diagram of primary referred DAB bidirectional converter.

The peak current of transformer can be represented as:

$$I_1 = \frac{T}{2L_k}\left(2\frac{V_o}{n}d + V_{in} - \frac{V_o}{n}\right)$$
$$I_2 = \frac{T}{2L_k}\left(2V_{in}d - V_{in} + \frac{V_o}{n}\right) \tag{1}$$

Dual active bridge converter operates in both buck and boost mode and Fig. 3 provides the operation waveform of buck and boost mode operation of dual active bridge converter.Fig. 4

* Corresponding author.
E-mail addresses: principal@acoe.edu.in (R. Adireddy), arunpratap522@gmail.com (K.N.G. Arun Pratap), himajatata@gmail.com (T. Himaja), murthy.kvs@aec.edu.in (K.V.S. Ramachandra Murthy).

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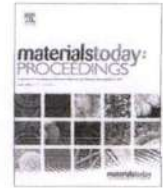
Design of sliding mode controller for induction motor drive

Ramesh Adireddy, Kunche Nanibabu, M. Ravindra, K.V.S. Ramachandra Murthy

Department of Electrical and Electronics Engineering, Aditya College of Engineering, Surampalem, A. P., India

ARTICLE INFO

ABSTRACT

This paper provides detailed analysis of sliding mode controller for 3-phase induction motor drive. Synchronous reference frame modeling of induction motor drive has been discussed and also design of sliding mode controller has been designed and discussed. A simulation has been done for results analysis of sliding mode control of 3-phase induction motor and outcome achieve satisfactory. In simulation results, different speed tracking and speed regulation techniques of sliding mode control of induction motor has been presented.

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1. Introduction

Induction motor are the backbone of industrial control because of simple and robust structure and higher reliability. Industrial arena requires high performance motion control application. There is different type of control structure for induction motor such as scalar control and vector control. Direct torque control (DTC) and field-oriented control (FOC) are two good control technology for induction motor. For measurement of speed, mechanical speed sensors are used. But to overcome the limitations and issues of sensors, different researchers have suggested sensor less control scheme. Both FOC and DTC can be used in sensor less control mode and gives promising results. Sliding mode is one of the classic nonlinear controller algorithms which is primarily used for system with nonlinear dynamics and system with uncertain dynamics [7]. Sensor less sliding mode controller of induction motor drive has been discussed in [1]. Direct torque control with super twisting sliding mode control has been discussed in [2]. Adaptive input-output linearization control of induction motor has been discussed in [3]. Sensor less control of AC motor drive has been detailed in [4]. Sliding mode control without flux estimator has been discussed in [5]. Sensor less field-oriented control of induction motor has been discussed in [6]. Space vector modulation technique along with sliding mode control technique for induction motor has been discussed in [10].

This paper provides design and implementation as well as simulation results of sliding mode control of 3-phase induction motor.

Synchronous reference frame modeling has been discussed. The sliding mode controller uses sensor less approach where frequency of the system is estimated. The complete sliding mode control design has been discussed and mathematical formulation provided. In simulation results, different speed tracking and speed regulation techniques of sliding mode control of induction motor has been shown in this paper.

2. Modelling of induction motor

This section provides mathematical modeling of induction motor.

Fig. 1 provides per-phase equivalent circuit of induction motor whereas Fig. 2 presents synchronous reference frame of induction motor.

Stator voltage on d-axis and q-axis are represented in Eq. (1) where ω_e refers to reference speed and ψ represents flux linkage

$$v_{ds} = R_s i_{ds} + \frac{d\psi_{ds}}{dt} - \omega_e \psi_{qs} \tag{1a}$$

$$v_{qs} = R_s i_{qs} + \frac{d\psi_{qs}}{dt} - \omega_e \psi_{ds} \tag{1b}$$

Rotor voltage on d-axis and q-axis are represented in Eq. (2)

$$v_{dr} = R_r i_{dr} + \frac{d\psi_{dr}}{dt} - (\omega_e - P\omega_r)\psi_{qr} \tag{2a}$$

$$v_{qr} = R_r i_{qr} + \frac{d\psi_{qr}}{dt} + (\omega_e - P\omega_r)\psi_{ds} \tag{2b}$$

E-mail addresses: principal@acoe.edu.in (R. Adireddy), murthy.kvs@aec.edu.in (K.V.S. Ramachandra Murthy)

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Design and Analysis of AC-DC Power Factor Correction Converter

Rayapati Venkatesh
Department of Electrical and Electronics Engineering
Aditya College of Engineering and Technology
Surampalem, Andhra Pradesh
venkatesh.rayapati@gmail.com

K Durgendra Kumar
Department of Electrical and Electronics Engineering
Aditya Engineering College
Surampalem, Andhra Pradesh
durgendrakumar@gmail.com

Tata Himaja
Department of Electrical and Electronics Engineering
Aditya College of Engineering
Surampalem, Andhra Pradesh
himajatata@gmail.com

Abstract— **The present work provides details of controller design for AC-DC power factor correction converter. Voltage mode and current mode control techniques of PFC converter has been discussed. Simulation as well as experimental verification has been provided to justify the theoretical basis.**

Index Terms—**Power factor correction; AC-DC converter; Controller**

I. INTRODUCTION

The distortion of normal current waveform due to different nonlinear utility loads create harmonics in AC distribution system. These harmonics are harmful in nature and distort the power factor of the system. There are different standards for suppression of current harmonics. IEEE 519-1992 and IEEE 1000-3-2 are some of the recognized standards for dealing with current harmonics. For a unidirectional single phase rectifier system, there are different methods to improve the power factor which will reduce the harmonic contents. The methods can be broadly classified as passive method and active method. In passive method, additional passive components are inserted in the line side or load side of the rectifier so as to suppress the harmonics whereas in active method, buck or boost converter are used to improve the power factor.

Classical AC-DC power factor correction (PFC) converter comprises of a diode bridge rectifier followed by a boost converter to regulate required DC output voltage. AC-DC PFC provide good voltage regulation, input current regulation, increased power density and reduced weight and size. The design of AC-DC PFC converter is very challenging and a lot of research has been going on in this area. There are several topologies which has been investigated for the same. There are different kind of linear as well as nonlinear controllers which are implemented for AC-DC PFC converter.

Experimental evaluation of active power factor correction techniques have for AC-DC boost converter has been discussed in [1]. Bridgeless totem-pole PFC rectifier using GaN device has been discussed in [2]. Isolated AC-DC PFC with reduced number of switches have been discussed in [3]. Suppression of line frequency instabilities in AC-DC PFC has been discussed in [4]. Different techniques for EMI filter design has been discussed in [5-8]. Different DC-DC converter topologies are discussed in [9-10].

This paper provides a design and control aspect of AC-DC PFC converter where different controller techniques have been evaluated. Section II provides the design of AC-DC PFC, Section III provides the control aspects of AC-DC PFC, Section IV provides the simulation results, Experimental results are provided in Section V. Conclusion is provided in Section VI.

II. DESIGN OF AC-DC PFC CONVERTER

Figure 1 shows the block diagram of AC-DC converter with power factor correction scheme. Input filter or EMI filter is used as the first stage, rectifier is used as a second stage and DC-DC boost converter is used as the third stage. Feedback control scheme is used to control the switch of the boost converter.
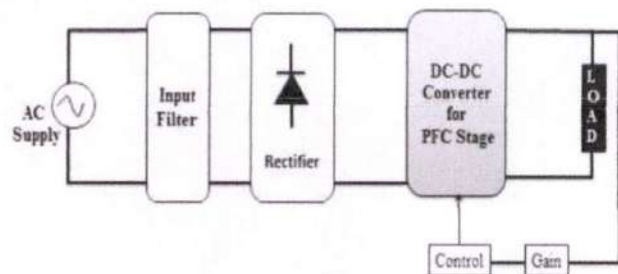
Fig. 1. Block diagram of AC-DC converter with power factor correction stage

TABLE I.   DESIGN PARAMETERS FOR AC-DC PFC

	Parameter	Min	Typical	Max	Unit
V_{in}	Input Voltage	195		270	VAC
f_{in}	Input frequency	47		63	Hz
V_o	Output Voltage		390		VDC
P_o	Output Power			1000	W
	Line regulation			5%	
	Load regulation			5%	
$p.f.$	Power factor		0.99		
η	Efficiency		96%		

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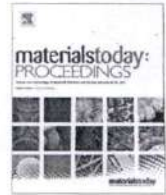
Effect of parameters and surface analysis on eglin steel by shot blasting method

P. Srinivas Reddy [a], P. Ravi Kumar [a], D.V.S.S.S.V. Prasad [b], Bh. Saroja Rani [c], CH.LDS. Narayana Gupta [d], A. Daniel Das [e], Ram Subbiah [f,*]

[a] Department of Mechanical Engineering, CVR College of Engineering, Hyderabad, India
[b] Department of Mechanical Engineering, Aditya Engineering College, Surampalem, Andhrapradesh, India
[c] Department of Humanities and Sciences, Gokaraju Rangaraju Institute of Engineering and Technology, Hyderabad, India
[d] Department of Humanities and Sciences, Malla Reddy Engineering College, Hyderabad, India
[e] Department of Mechanical Engineering, Karpagam Academy of Higher Education, Coimbatore, India
[f] Department of Mechanical Engineering, Gokaraju Rangaraju Institute of Engineering and Technology, Hyderabad, India

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ABSTRACT

The surface finish is progressively improved by shot blasting method. The present work describes the different factors of shot blasting process of eglin steel and their effect on surface roughness (Ra). The surface roughness were evaluated based on the different input constrains such as blasting angle, standoff distance (SoD) and blasting time. The surface topography of the eglin steel was analyzed before and after the shot blasting process using atomic force microscopy (AFM). The optimal shot blasting parameter is attained through Taguchi method. The effect of parameters on surface roughness and their contribution were validated by analysis of variance. It was concluded that the surface roughness was greatly improved after shot blasting process. The optimal surface roughness was performed at 900 mm of standoff distance, 60 degree of blast angle and blasting time of 50 s. The excellent surface was attained after shot blasting process of eglin steel with average roughness is 14.15 nm.
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1. Introduction

The surface texture is improved and rust particles are removed by shot blasting method. Shot blasting process is applied in construction, railways, automotive and foundry industries. The surface finish of the eglin steel was enhanced from 44.15 nm to 14.15 nm using shot blasting method. Eglin steel has admirable material properties and its grain structure was used to increase the surface topography. The surface cleaning and enhancement of surface roughness were attained using shot blasting of different steels. The residual stresses and rust particles were completely removed by shot blasting process [1]. The improvement of surface roughness of steel sheet depends on the different input constrains such as shot velocity, flow rate of the steel balls and blasting time [2,3]. The microstructure of the surface and surface quality characteristics were analyzed during shot blasting of stainless steel. The

surface properties were improved after shot blasting process [4]. The surface quality mainly depends on the distance between nozzle and work piece. The impact and surface finish of the material was depends on the standoff distance. The smaller standoff distance was made excellent surface finish during shot blasting process [5]. The different shot blasting factors and their effect on surface roughness were investigated in shot blasting of different steel grades [6]. The standoff distance and blast angle was produced the largest effect on surface roughness. The oxide and rust layer was completely removed by high velocity of steel balls [7]. The surface was strengthened by high velocity of steel balls and its impact. The morphology of the material structure was analyzed after shot blasting process [8,9]. The surface roughness experiment of the different materials were evaluated and it's depends on the composition of different alloying elements and metal removal of the different processes [10–14]. Taguchi optimization was used to increase the performance of the process and enhance the quality characteristics of responses. The correlation between input and output constrains were used to analyze the optimal responses and their effect [15–17].

A Numerical Approach to Find Distinct Mechanisms of a Planar Kinematic Chain Using Linkage Coordinates

Vinjamuri Venkata Kamesh, V. Srinivasa Rao, D. V. S. S. S. V. Prasad, and P. S. Ranjit

Abstract In a planar kinematic chain, different mechanisms are possible when on link's mobility is restricted by fixing it. These mechanisms obtained are called as inversions. In the present paper, a numerical approach is proposed which is based on new concept defined as 'linkage coordinates' related to connectivity of a link in a closed planar kinematic chain. The proposed method is tested on various linkages (8, 9, 10) with varying degree of freedom (DoF) for which identified inversions are in correlation with earlier results in the literature. The proposed method can be applied to analyze other characteristics of kinematic chains with higher linkages and higher DoF. 8-link 1-DoF completed results are presented in the results section of the paper.

Keywords Effective connectivity · Distinct mechanism · Linkage

V. V. Kamesh (✉) · P. S. Ranjit
Aditya Engineering College(A), Surampalem, East Godavari Dist., Andhra Pradesh, India

V. Srinivasa Rao
Raghu Engineering College(A), Dakamarri, Visakhapatnam Dist., Andhra Pradesh, India

D. V. S. S. S. V. Prasad
Aditya College of Engineering, Surampalem, East Godavari Dist., Andhra Pradesh, India

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Analysis of wear behavior and shear properties of nano – ZnO_2/jute fiber/epoxy composites by Hand layup technique

K.G. Sagar [a,*], K. Ramachandran [b], Koushik Kosanam [c], B. Marxim Rahula Bharathi [d], M. Rama [e], Sumanta Bhattacharya [f]

[a] Department of Mechanical Engineering, Cambridge Institute of Technology, Bangalore 560036, Karnataka, India
[b] Department of Mechanical Engineering, N.S.N College of Engineering & Technology, Karur 639003, Tamil Nadu, India
[c] Master's Student & Graduate Researcher, Department of Manufacturing Systems Engineering & Management, California State University, Northridge, 18111, Nordhoff St, CA 9133, ISA
Department of Mechanical Engineering, Aditya College of Engineering, Surampalem 533437, Andhra Pradesh, India
[e] Department of Chemistry, Ch.S.D.St Theresa's College for Women (A), Eluru 530003, Andhra Pradesh, India
[f] Department of Textile Technology, Maulana Abul Kalam Azad University of Technology, Kolkata 700064, West Bengal, India

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ABSTRACT

Nano-ZnO_2 was added to a jute fiber/epoxy composite whether it affected wear metrics and compressive strength. A silane-coupling agent with an amin-terminated end was used to functionalize the surface of ZnO_2 nanoparticles. The modified ZnO_2 was characterized employing FTIR spectroscopy and TGA. Using the hand layup method, the multiscale composites were created by distributing different amounts of nanoparticles (0.5, 1, 3, also 5 wt%) in matrix. The 3weight%ZnO_2-filled compound has the finest characteristics out of all of these specimens. Adding ZnO2 to the composites caused in a 43 % increase in Compressive property in the short-beam shear test. Adding 3 wt. %ZnO lowered wear rate by 80 % and COF by 48 %. Wear and fracture mechanisms were studied. According to the discoveries of this study, M - ZnO_2 is a promising alternative to be employed as a nanofiller in fiber-strengthened polymeric matrix. An epoxy/jute composite was supplemented with nano-ZnO_2 to examine the effects on wear metrics and interlaminar shearing strength during dry sliding, according to the study's findings. A silane-coupling agent with an amin-terminated end was used to functionalize the surface of ZnO_2 nanoparticles. The modified ZnO_2 was characterized using Fourier-transform infrared spectroscopy and thermogravimetric studies. Hand layup was used to disperse different quantities of nanoparticles (0.5, 1, 3, also 5 wt%) in the matrix to create the multiscale composites. The 3 wt%ZnO_2-filled composite has the finest characteristics out of all of these specimens.
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1. Introduction

FRPs are popular engineering materials used in a range of industries, including automotive, aerospace, and defence [1–2]. Natural fibres are increasingly being used in a variety of applications as people become more concerned about environmental issues [3]. Composites fabricated with both organic and inorganic have variety of applications in numerous sectors [4]. Jute fibres have been widely examined for their impact on mechanical characteristics of polymeric substances [5–7].It was found that the qualities of glass and neat epoxy compounds were superior to those of epoxy compounds reinforced with jute fibres, according to [8]. Nanofillers have recently aroused a lot of interest as a way to enhance mechanical resistance of FRPs [9]. As is generally known, the mechanical resistance of nanofiller-filled FRP are typically superior to those of plain FRP. For example, [10–11] found that specimens strengthened with 5 % jute fibre and 5 % nanoclay had the maximum tensile and flexural strengths. Mechanical and thermomechanical resistance of textile-reinforced composite materials are enhanced by MWCNTs according to [12] (multi-walled carbon nanotubes). According to [13–14], silanized CaCO-3 nanoparticles improved the tensile and flexural characteristics of basalt fiber/epoxy composites. They studied the mechanical

Performance analysis of mineral oil based nano-lubricants with sulphur impregnated reduced graphene oxide nanosheets

Satish Perabathula [a,*], N. Bhanu Teja [a], P. Hari Chandra Prasad [a], M. Sarat Chandra Prasad [a], Shijo Thomas [b]

[a] Department of Mechanical Engineering, Aditya College of Engineering, Surampalem 533437, Andhra Pradesh, India
[b] School of Nano Science and Technology, NIT Calicut, Kerala 673601, India

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ABSTRACT

Nano lubricants offer a great advantage in increasing the performance of the refrigeration systems by improving the tribological properties. Researchers found out that better lubrication properties can be achieved through nanolubricants by adding nanoparticles at optimum concentrations to the base lubricating oils. Reduction in frictional coefficients and wear rates contribute to the improvement of COP. Theobjective of the present work is to reduce the frictional coefficients and specific wear rate by adding reduced grapheneoxide (RGO) based hybrid nanomaterial to the lubricating oil (R134a oil) used in the refrigerator compressors. The RGO was synthesized by using modified hummers method, which was then impregnate with sulphur to obtain sulphur - reduced graphene oxide (SRGO) nanosheets. The nanolubricant was prepared by dispersing (SRGO) nanosheets in mineral oil using ultrasonic agitation. The dispersion stability and morphology studies were conducted using DLS and FTIR. Tribological studies were conducted using 4 ball friction tester and pin on disc tester. The thermophysical properties of the nanolubricants like thermal conductivity and viscosity were also estimated. The friction coefficient was found to decrease by 11% for addition of 0.1% by volume of SRGO nanosheets in mineral oil. The viscosity of nanolubricant containing 0.1% of SRGO nanosheets was 6.6% higher than base oil.

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1. Introduction

As the energy consumption increases day to day in human life due to industrialization, the average energy requirements per year is also increasing substantially. According to BP Statistical review reports of world energy 2015 [1–4], Nanotechnology is a rapidly emerging field which has so many applications in all fields of science and technology[5–8].Nanotechnology is a science which mainly deals with controlling matter at dimensions of several nanometers, which leads to many interesting applications [9–12]. The nanomaterials possess unique properties when compared with bulk materials. The behavior of materials may differ at smaller length scales due to changes in structure, energy levels, etc [13–15]. The material properties at nano-level show a significant change from its bulk nature. Refrigeration is one of the fields in which nanotechnology can show significant impact. Refrigeration sector consumes lot of energy every year and can be considered

as a global warming promoter [16–18]. The present scenario of energy demand necessitates the development of new methods to reduce the energy consumption. The advances in nanotechnology can be utilized to reduce the power consumption in refrigeration systems [19–22]. Since the invention of refrigeration, many attempts have been made to make the system better and efficient in many ways. One of those methods include minimizing the power consumption and thereby reducing global warming potential [23–25]. Many researchers introduced different methods to achieve this objective and conducted various experiments [26–27]. With the recent developments in nanotechnology, researchers started working on the usage of nanoparticles in vapor compression refrigeration system. The present work mainly aims at the reduction of power consumption and thereby increasing COP (Coefficient of Performance) of vapor compression refrigeration system. This can be achieved by using nanolubricants in the refrigerator compressors. Nanolubricants can be prepared by suspending nanoparticles in lubricants followed by sonication for proper dispersion. Nanolubricants reduce the friction coefficients.

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Chapter 29
Forest Fire Detection Using Satellite Images

Kakarapalli Lalitha and Geesala Veerapandu

Abstract Forest represents a complex ecosystem on earth that is a refuge to several living beings such as plants, animals, birds and also a huge resource of minerals, lakes and rivers. It almost covers 30% land of the earth and is highly necessary to balance the ecosystem along with the climate. Therefore, the loss of forests is a severe disaster. Along with deforestation, forest fire has a major impact. Although, the wildfires are not in control fully and most of the time in the various region of the earth, which not only harm the climate but also make a very bad impact on the ecosystem. As forest fires are a very common phenomenon, some of the preventive actions and units are already defined such as McArthur Forest Fire Danger Index (FFDI), the establishment of a separate section in the disaster team for monitoring and assessment of wildfire but intense research for preventing wildfire is highly necessary. Nowadays, satellites are used to scan the earth's surface. This technique can also be used to detect forest fires. With the help of the spatial high-resolution imagery system, the hot spot areas can be accurately located for determining the forest fire's locations.

29.1 Introduction

Wildfires are one of the most challenging global environmental issues that cause significant harm to natural and environmental resources. Most cases of fire in forests occurred during the summer seasons. Once the spark takes place anyhow in the forest, the large unmanaged area is filled with dry woods and leaves which act as fuel to this spark and due to this favorable and highly flammable environment, the spark will turn into the uncontrollable fire within a few moments. Estimating the risk of forest fires would be a great help to disaster management authorities in taking the appropriate actions in order to minimize the losses in terms of the evacuation of the area and saving lives of animals as well as local residents [1–3]. A huge number of commercial

K. Lalitha · G. Veerapandu (✉)
Aditya College of Engineering, Surampalem, AP, India
e-mail: veerapandu_ece@acoe.edu.in

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Contour and Texture based Approaches for Dental Radiographic and Photographic images in Forensic Identification

Dr.Jaffino.G
Aditya College of Engineering
Surampalem
First.jaffino22@yahoo.com

J.Prabin Jose
Kamaraj College of Engineeing
Virudhunagar
Second.prabinjose@gmail.com

Dr.M.Sundaram
VSB Engineering College
Karur

Abstract- The identity of decomposed and severely burnt corpse is a challenging task in forensic odontology. In such situation, dental records have been used as a prime tool for forensic identification. The main goal of this work is to identify a person by comparing contour shape extraction and texture feature extraction approach for both radiographic and photographic dental images. In this research, contourlet transform is used as a contour shape extraction; Local Binary Pattern (LBP), Center Symmetric- Local Binary Pattern (CSLBP) is used as texture features. Different matching algorithms are used to identify the person by comparing both AM and PM images. In order to salvage better matching performance, Cumulative Matching Curve (CMC) is used for both radiographic and photographic images. Hit-rate indicates that the better matching is observed for radiographic images than photographic images.

Keywords: Contourlet Transform, local binary pattern, hit rate, person identification, and dental images.

1. Introduction

The field of forensic dentistry or forensic odontology involves the application of dental science those who unidentified persons are only to be identify by using dental evidence. In other words, it is the application of dentistry in legal proceedings deriving from any evidence that pertains to teeth. Dental identification can contribute the major role for identification of person when there are some changes in postmortem like tissue injury, DNA and lack of fingerprint, etc. Dental identification is a main consequence in cases where the deceased person is decomposed, skeletonized or burned. The main part of forensic identification is to identify the person that is affected by mass disaster, flood, Earth quake, bomb-blast and Tsunami etc. The main significance of teeth in person identification is to identify deceased fatalities whose remains have been severely damaged for the above circumstances. David R.Senn et.al [1] has explained that the identification of a person from dental records by a qualified forensic dentist has long been established and accepted by court as a means to prove the identity. Dental identification has proved that the most suited biometric for victim identification in Tsunami of December 26, 2004 and Thailand Tsunami attack in January 2005. Also for the most recent incident of Malaysia Airlines Flight was shot down in July 2014, among all 283 passengers 127 people was identified by victim identification. For these circumstances all the other means of identification are less effective compared to dental identification. Dental identification is used to identify a person by comparing both Ante mortem and Post mortem records.

Related Work:

There are limited literature papers are available for person identification. For the initial paper, Anil.K.Jain et al [2-3] proposed the semi-automatic method for person identification. In this work, they

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NIT Arunachal Pradesh
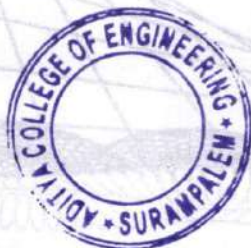
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Portable Stress Measurement and Analysis System (PSMAS): The Correlation of Body and Mind Analysis Using GSR Sensor

Shakila Azim, I. D. Soubache, B. Annapurna, S. V. G. V. A. Prasad,
Capt. K. Sujatha, and Raushan Kumar Singh

1 Introduction

Certain factors have a significant impact on a human's mental process and behavioural style. Some of the primary positive elements of mental health include happiness, confidence, self-esteem, interpersonal relationships, and comfort [1]. Our perceptions of society, and even of ourselves, are primarily influenced by these elements. The foregoing criteria have a big impact on our behaviour and psychological presentations. Several negative mental parameters influence our beliefs and social behaviours [2]. Social withdrawals, severe paranoia, dramatic mood swings, and other negative aspects are some of the most common mental characteristics. There is a deciding factor that governs both positive and negative mental characteristics, and that component is stress. Stress is a factor that, when induced in abundance, reduces the stillness of mental state, it is crucial to keep it in a manageable range.

S. Azim
Department of Psychology, MDDM College, Muzaffarpur, Bihar, India

I. D. Soubache (✉)
Department of BME, RGCET, Pondicherry, India
e-mail: idsoubache@gmail.com

B. Annapurna
Department of CSE, Aditya College of Engineering, Surampalem, AP, India

S. V. G. V. A. Prasad
Department of Physics, Ideal College of Arts and Sciences, Kakinada, AP, India

Capt. K. Sujatha
Department of Mathematics, St. Joseph's College for Women (A), Visakhapatnam, AP, India

R. K. Singh (✉)
Spectrum Solutions, Pondicherry, India
e-mail: spectrumsolutions.md@gmail.com

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Cyber-Attack Prediction in Virtual IoT using Leveraging Mechanism

Garapati SN Murthy[1], V. Kavitha[2], V. Chandrasekar[3], Dirisala J Nagendra Kumar[4], M. Deivakani[5], Tamilarasan. T[6],

[1]Department of Computer Science & Engineering, Aditya College of Engineering, Surampalem, Andhra Pradesh, India, murthygsnm@yahoo.com

[2]Department of Computer Science Engineering, S.A. Engineering College, Chennai, Tamil Nadu 600077, India,

[3]Department of Computer Science Engineering, SIMATS School of Engineering, Saveetha Institute of Medical and Technical Sciences, Chennai,

[4]Department of Information Technology, Vishnu Institute of Technology, Bhimavaram, Andhra Pradesh 534202, India,

[5]Department of Electronics and Communication Engineering, PSNA College of Engineering and Technology, Dindigul, Tamil Nadu 624622, India,

[6]Department of Computer science and Engineering, Panimalar Engineering College, Chennai, Tamil Nadu 600123, India,

Abstract-Internet of Things (IoT) adoption grows in numerous industries, cyber-security threats utilising low-cost end-user devices increase, compromising IoT implementation in a variety of situations. To solve this issue, developing Software Defined Networking (SDN) and Network Function Virtualization (NFV)bring new safety accelerators, providing IoT network systems with the versatility needed to deal with the IoT security deployments. Here, honeynets may be strengthened with support for SDN and NFV, allowing them to be used in IoT applications and boosting security. They provide service for virtualization that replicate the setup of actual IoT networks so that intruders might be diverted from their intended target.

Keywords – Internet of Things, cyber-security, vulnerability, network deployment, intrusion detection

1. Introduction

IoT is made up of millions of incompatible devices that communicate with one another and produce a massive amount of diverse data flow. Constricted IoT devices work in potentially hostile situations, making security and privacy concerns more challenging to handle due to hardware constraints on processing speed, battery and memory. Additionally, low-power wireless networking, M2M interaction paradigms, unsupervised, low-cost installations, and ubiquitous, dynamic settings all provide additional security and privacy risks. Different sorts of sophisticated cyberattacks, such distributed denial of service (DDoS) assaults that take use of compromised Internet of Things bots (like Mirai), are on the rise [1].

Diverse scalable security procedures and tactics are developing to combat these new types of IoT-based cyber-attacks [2]. In this way, honeynets may assist in fending against cyber-attacks on the IoTs. Honeynets are systems of honeypots used to predict cyber-attacks and understand attackers' behaviour by accessing the actual internet when they are contacting a replicated, managed and segregated network. The highly interactive may simulate the network by hosting thehoneypot range and applications an intruder are steered to spend his time. In order to avoid assaults and prepare for

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MACHINE LEARNING: PRINCIPLES AND APPLICATIONS

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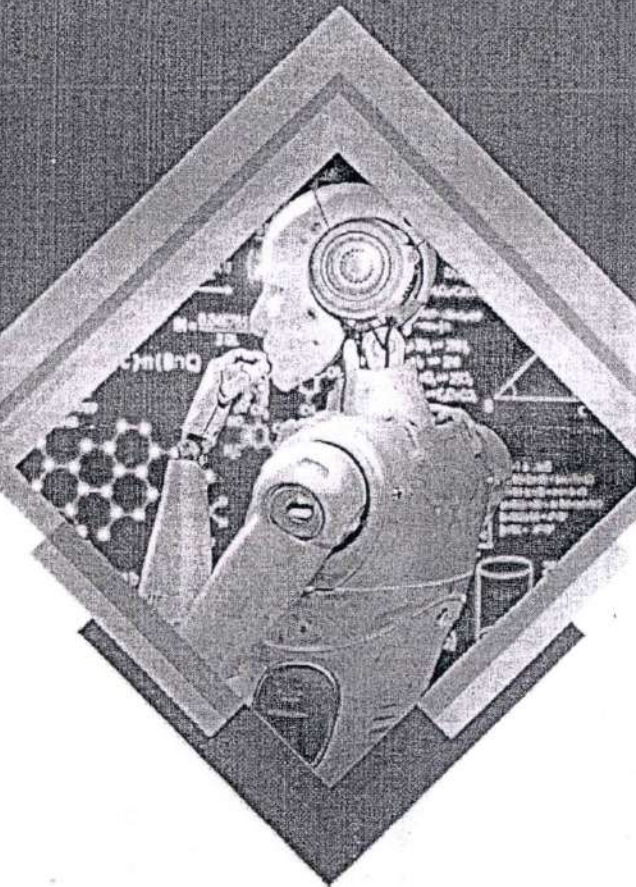
Dr. Mohammad Jabir Ullah

Dr. Meka Anuradha

Dr. G. S. N. Murthy

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AUTHORS PROFILE

Dr. B Kiran Kumar, Dept. Of Computer Science and Engineering, Aditya College of Engineering. The combination of a distinguished professional history in the industrial, academic and research sectors, as well as a shown love for learning about the educational system He is responsible for fulfilling the organization's objectives by skill, knowledge, service, and determination, as well as for providing nourishment to the organization's worldwide environment. He holds PhD in Computer Science and Engineering from Acharya Nagarjuna University, Master of Technology in IT from Andhra University, Visakhapatnam. His Research interests are Information Centric Networks, Computer Vision, and Machine Learning

Mr. S. Balasubramanian, Working as an Assistant Professor in Computer Science, DDE, Alagappa University. I had done MCA from Alagappa University and passed UGC NET in 2012. I am having more than 9 years of rich teaching experience. I have published one Indian patent and 3 International Journals. My current research interest in Fog computing, Internet of Things and Big data Analytics.

Dr. Sanjaya Kumar Sarangi, Dept. Of Computer Science and Applications, Utkal University. Distinguished background in Industry, Academic and Research sectors combined with a demonstrated passion for the knowledge of the educational system. He is associated towards achieving the organization objectives though skill, knowledge,service, determination and to nourish within the global environment. He holds PhD in Computer Science from Utkal University, Master of Technology in Comp.Sc & Engg from ITER, Bhubaneswar. He was visiting Doctoral Fellow in the University of California, USA. His Research findings are in Wireless Ad hoc and Sensor Network, IDS, Mobile Communications, Geospatial Science and Remote Sensing, Climate Change and Disaster prediction system. His research finding includes effective communication and response system during disaster in the coastal belt of India. He has number of publications in Journals, Patents and Conferences. His interest also in Information and Communication Technology (ICT) to enhance and optimize the information and worldwide research that can lead to be improved the student learning and teaching methods. Also undertakes the ICT based support for the smooth functioning of e-learning system for the University and departments.

Dr. P. Jayalakshmi, Dept. Of Mathematics, Sri G. V G. Visalakshi college for women has a passion for the knowledge in computer science especially in networks. She holds her Ph. D degree in Fuzzy graph theory. The applications of her research findings are in communications, networks and clustering. Her interest is to enhance research among students in networks.
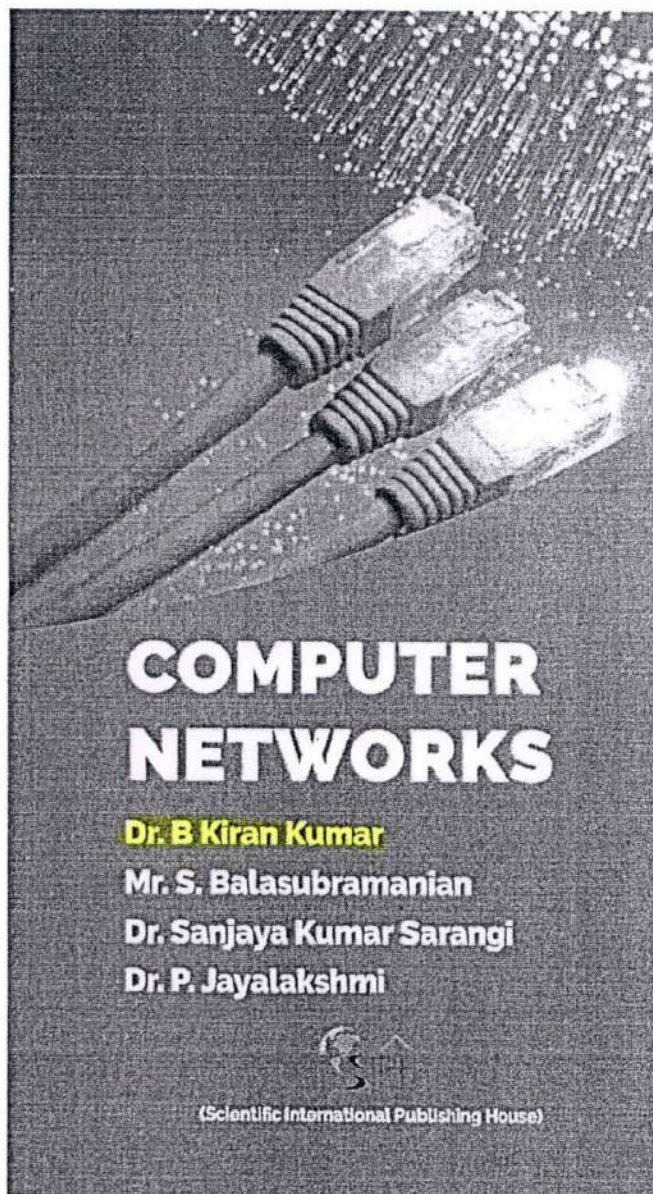
COMPUTER NETWORKS

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Dr. B Kiran Kumar
Mr. S. Balasubramanian
Dr. Sanjaya Kumar Sarangi
Dr. P. Jayalakshmi

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ML and IoT-based Soil Type Analysis and Prediction System

Talatam Veerraju[1], Mani P.K[2], Jhanani Shree U[3], V G Pratheep[4], P. Valarmathi[5],

B. Uma Maheswari[6],

[1]Department of Computer Science & Engineering, Aditya College of Engineering, Surampalem,
Andhra Pradesh 533437, India. veerraju_cse@acoe.edu.in

[2]Department of Electrical and Electronics Engineering, Vel Tech Multi Tech
Dr.RangarajanDr.Sakunthala Engineering College(Autonomous), Chennai, Tamil Nadu
600062,India,

[3]Department of Electronics And Communication Engineering, Rajalakshmi Engineering College,
Chennai, Tamil Nadu 602105,India,

[4]Department of Mechatronics Engineering, Kongu Engineering College, Perundurai, Tamil Nadu
638060,India,

[5]Department of Computer Science and Engineering, Kongunadu College of Engineering and
Technology, Thottiyam, Trichy 621215, Tamil Nadu, India,

[6]Department of Computer Science Engineering, St. Joseph's College of Engineering, Chennai, Tamil
Nadu 600119,India,

Abstract - The agricultural economic sector looks to be dominant in India's social structure. Sometimes farmers sow the crop without knowing the soil type and with more fertilizers to satisfy the customer preferences. This will affect productivity and decrease the nutrients present in the soil. It is important to identify the soil type, so then the farmer will choose the crop rightly. The solution will be done by employing new technologies like the Internet of Things (IoT) and Machine Learning (ML). In this work, the IoT is used to capture and send the details of the soil type and its location. Then ML is used to identify the soil type. To analyse and anticipate the kind of soil, data will be collected from Kaggle, pre-processing is done secondly, feature extraction is being used to extract important attributes from the image. The Wavelet Transform is employed as a feature extraction technique. The extracted data is subsequently employed in training and testing the ML model to classify the kind of soil. Support Vector Machine (SVM) and Linear Discriminant Analysis (LDA) algorithms are chosen as an ML model. Both models are evaluated using the metrics and identified that the SVM will be best for soil classification. Finally, the mobile app is created with a simple Graphical User Interface (GUI), so farmers can easily access the proposed technique. The SVM is employed in the mobile app to predict the soil type based on the information acquired through IoT.

Keywords—Soil, Image, ESP32 Cam, Mobile Application, Feature Extraction, Accuracy

I. INTRODUCTION

The majority of people on the planet depend on agriculture for their livelihood. Agriculture's output is quite significant [1]. However, in recent years, the output of agriculture has been progressively dropping. Soil has a decisive part in agriculture. Plants use the nutrients in the soil to flourish. There are numerous soil variations, each with its special qualities. Selecting the precise crop for the factual type of land may boost productivity. This can be achieved by first performing a soil analysis and then classifying the results into different soil types. Depending on the type of soil and the regional environmental parameters, one can select the crop that will be most profitable. The traditional methods are pricy, labour-intensive, and take a long time. New technologies and procedures are therefore needed to enhance the current system and produce quicker and better results. ML is one of the newest technologies in agriculture. ML can be applied to the agriculture sector to improve crop yield and quality. It is used to find patterns in agricultural data and group them into more comprehensible groups. The processes that follow can take advantage of this knowledge. Data gathering, data processing, training on samples of data, and testing make up the normal workflow for ML techniques. Algorithms like SVM and LDA can be used to categorize soil and forecast crops based on past trends and the kind of soil. A soil dataset with various chemical properties and a crop dataset with geographical information are required for the project [2]. The research aims

IoT based Patients Monitoring System in Healthcare Service

Sudheer Hanumanthakari[1], SVVSR Kumar Pullela[2], Shankar Nayak Bhukya[3], K. Vijayalakshmi[4], S Rehan Ahmad[5], Narendra Kumar[6]

[1]Department of Electronics and Communication Engineering, Faculty of Science and Technology, IFHE, Hyderabad 501203, Telangana, India. hsudheer@ifheindia.org
[2]Department of Computer Science and Engineering, Aditya College of Engineering, Surampalem 533437, Andhra Pradesh, India.
[3]Department of Computer Science Engineering (Data Science), CMR Technical Campus, Hyderabad 501401, Telangana, India.
[4]Department of Computer Science and Engineering, Sri Sai Ram Institute of Technology, Chennai 600044, Tamil Nadu, India.
[5]Department of Zoology, Hiralal Mazumdar Memorial College for Women, Kolkata 700035, West Bengal, India.
[6]Department of Electronics and Communication Engineering, RNS Institute of Technology, Bengaluru 560098, Karnataka, India.

Abstract— The medical field requires constant updating and the usage of advanced technology. This is due to the fact that different kinds of diseases as increased as the population of world has increased. Scientists and doctors try to come up with different types of preliminary tests and other diagnostic technologies to detect the presence of a disease in its early stages. Though the preliminary test for different health issues is different it all consists of the measurement of basic vital parameters like temperature and the d pressure etc. To ease this process this study aims the development a circuit which is capable of constantly monitoring the vitals of a patient and displaying the result to an attendant. The principal flow of the circuit is initiated by the sensors that are instantly fastened to the patient. The sensors continuously gather and transmit the patient's vital indicators to the node MCU model. The AWS cloud then receives data from the model. The platform compares the collected data to the specified value. If no anomalies are found, the cloud simply records the data before stopping. However, if there are any anomalies, the cloud orders the node MCU model to activate the emergency output gadgets, such as the buzzer and the LED, to immediately alert the attendant or the nurses. A website is also created, and it is utilised to display the patient's information as well as vital records. Along with the patient's vital signs, it also shows an emergency condition when one of the patients has certain irregularities in one or more of the parameters. The physicians and other staff can keep an eye on all the patients at once without having to frequently visit a specific room thanks to this display of emergency information. This system is anticipated to be enhanced in the future with additional capabilities including automated parameter control without human intervention. In other words, the temperature is regulated when the ambient humidity or the body's temperature is abnormal.

Keywords— *Health care, parameter monitoring, Internet of Things, cloud computing etc.*

I. INTRODUCTION

The medical field and the doctors are one of the aspects of society which is considered next be God. This is due to the fact that doctors and the frontline workers like nurses dedicate their whole lives to monetary and providing solutions to health problems with utmost care. Different diseases and health issues have different effects on the body there are some problems which are common to almost all diseases. So, doctors often come up with the preliminary test which includes sensing the heart rate blood pressure temperature and other such parameters of the patient. When an abnormality is found in such basic vital of a patient the doctors decide to what to do further according to the abnormality found. In some cases, the patients are bedridden or kept in the hospital for a long time for observation. The observation includes the monetary of the vitals of the patient like the blood pressure and other above-said parameters. A person has to be appointed for the particular patient to check the vital periodically. But when the number of impatient in the hospital increases it also results in the need for many attendants which might be an issue in some scenarios.

To resolve this issue this study develops a circuit using the Internet of Things (IoT) and cloud computing to constantly monitor the vitals of the patients and send the output to the website which can be monitored using only one person. The construction and development of this circuit is explained clearly in the upcoming chapters.

II. LITERATURE SURVEY

When someone reaches the hospital for a health issue the first stage of the preliminary test is to find the vitals of the patient. Even when the patient has been admitted to the hospital and stays there for a period of time

Pomegranate Quality Analysis and Classification Using Feature Extraction and Machine Learning

Pullela SVVSR Kumar[1], S.Sudha[2], Pranjit Das[3], D.Pradeep[4], Samson Isaac. J[5], K.Vijaipriya[6]

[1]Department of Computer Science & Engineering, Aditya College of Engineering, Surampalem, Andhra Pradesh 533437, India. pullelark@yahoo.com

[2]Department of Biomedical engineering, Asian College of Engineering and Technology, Coimbatore, Tamil Nadu 641110,India,

[3]Department of Computer Science Engineering, KoneruLakshmaiah Education Foundation (K L University), Vaddeswaram, Andhra Pradesh 522302,India,

[4]Department of Computer Science Engineering, M.Kumarasamy College of Engineering, Karur, Tamil Nadu 639113,India,

[5]Department of Biomedical Engineering, Karunya Institute of Technology and Sciences, Coimbatore-641114.India.

[6]Department ofElectronics and Communication Enginneering,Sri SaiRanganathan Engineering College, Coimbatore, Tamil Nadu 641109, India.

Abstract— Fruits are an excellent source of nutrients and minerals. They have a high concentration of antioxidants and flavonoids, which are beneficial to one's health. Pomegranates have a high potential in preventing cell damage, boosting our immunity, helping with smooth digestion, fighting type-2 diabetes, keeping vital parameters in check and are seen to be effective inthe prevention of cancers. India is considered the largest producer of excellent varieties of pomegranates and thus the quality analysis in the export operation of pomegranates is highly concerned. Grading of pomegranates is very necessary for post-harvest management and is performed based on the external appearance like attractive colours, texture, size and shape which decides the standard of the fruit. Manual grading can be done which requires human operation and consumes more time. Hence quality assessment of pomegranates can be done using Machine Learning(ML) which is highly efficient. The process of feature extraction yields accurate results and can be done quickly. ML technology improves accuracy and efficiency and has improved user experience. The review paper proposes an efficient ML approach for pomegranate quality analysis using Histogram of Oriented Gradients (HOG) and Local Binary Pattern (LBP) feature extraction methods. K-Nearest Neighbour (KNN) and Naive Bayes (NB) algorithms are implemented in the designed model using both sets of feature extractors and the result illustrates that the LBP + NB model performs with better efficiency and greater accuracy.

Keywords—Pomegranate,Feature Extraction, Machine Learning Model, Performance Evaluation

I. INTRODUCTION

Pomegranate (Punicagranatum) is a very profitable cropwith immense medicinal values and India is considered to be a leading producer of pomegranates. They are very suitable for arid and semi-arid regions since they can endure hostile and harsh climatic conditions. The country's production has grown during the past ten years. During this time, pomegranate imports from India have grown by 3.5 times. Pomegranates are consumed all over the world due to their numerous nutritional and therapeutic benefits. Pomegranates have a variety of beneficial components and qualities. The ability to adapt to a variety of environments, hardiness, low maintenance requirements, consistent but great yields, better quality, good·therapeutic qualities, and the ability to put the plant to rest when irrigation potential is typically low suggested opportunities for expanding the pomegranate groves in India. It is beneficial for health and nutrition.

Grading, processing, and packing are dealt with during post-harvest management of pomegranate production. Post-harvest management is done manually in our country which is not very efficient. It involves considering the fruit's exterior, including its size, colour, and texture. Manual evaluations lack set standards for grading, which can result in improper grading, a decline in profit, and fruit spoiling. Therefore, a system that precisely assesses pomegranates according to the fruit's quality is required. The present study proposes anML model with an appropriate algorithm and feature extractors which accurately grade the pomegranates and overcomes the disadvantage of the traditional method.

II. LITERATURE SURVEY

. The paper evaluates the texture and colour gradient characteristics of pomegranate and mango fruits [1]. A pixel run of the fruits is used to determine the average colour gradients, variations, and colour coordinates for the primary colours red, blue, and green. These statistical traits are then
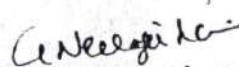
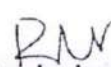## 2nd International Conference on Multifunctional Materials

ICMM-22

December 22-24, 2022

CERTIFICATE

This is to certify that **Ms. JYOTHI BUDIDA**, Assistant Professor, Aditya college of engineering, has participated and presented a paper entitled ***"Review of Thin film deposition and Techniques (ID: 46598)"*** in the 2nd International Conference on Multifunctional Materials held during December 22-24, 2022 at Geethanjali College of Engineering and Technology, Keesara, Telangana, India.

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calculation were also performed. All the calculations were carried out by B3LYP/6-311++G (d,p) method using Gaussian 09. The antibacterial and antifungal activity of the compound was also tested against various pathogens. The molecular docking studies concede that title compound may exhibit antibacterial inhibitor activity.

Keywords: DFT, FT-IR, FT-Raman, PES, Hirshfield surface analysis, DOS, Molecular docking
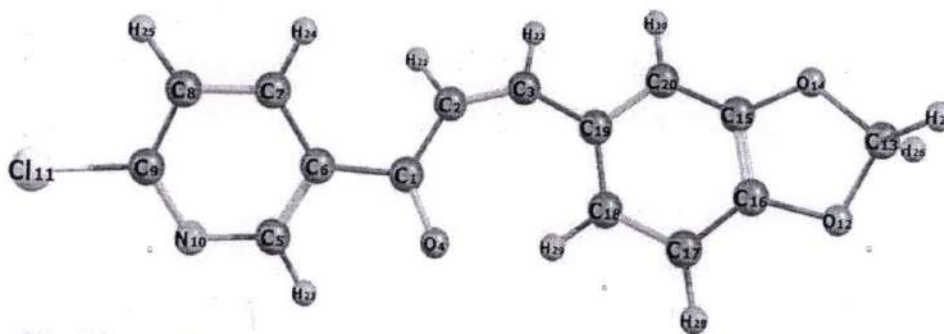

Fig. (2Z)-3-(2H-1,3-benzodioxol-5-yl)-1-(6-chloropyridin-3-yl) prop-2-en-1-one

CG-07

Role of Crystal growth in Functionality of 3-D Electronics

Kamala Srinivasan[1], Jyothi Buddida[2]

[1]Academic Consultant, S.V.University, Tirupati, Andhra Pradesh, India.
[2]Assistant Professor, Aditya College of Engineering, Surampalem, Andhra Pradesh, India.

Ultra-small integrated circuits have revolutionized mobile phones, home appliances, cars, and other everyday technologies. To further miniaturize electronics and enable advanced functions, circuits must be reliably fabricated in three dimensions. Achieving ultrafine 3-D shape control by etching into silicon is difficult, because even atomic-scale damage reduces device performance. Coating these silicon pyramids with a thin layer of iron imparted magnetic properties that until now were only theoretical.

"Silicon is the workhorse of modern electronics because it can act as a semiconductor or an insulator, and it's an abundant element. However, future technological advances require atomically smooth device fabrication in three dimensions.

A combination of standard dry etching and chemical etching is necessary to fabricate arrays of pyramid-shaped silicon nanostructures. Until now, atomically smooth surfaces have been extremely challenging to prepare. Integration into advanced technologies such as spintronics, which encode information by the spin rather than electrical charge of an electron, will considerably accelerate the functionality of 3-D electronics. The growth and study of topological materials, which possess remarkable electronic properties, has recently developed

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estimated before and after optimization. It has been proved that the net percentage of cost reduction is 15.98%. However, geometric programming can provide a computationally attractive view of sensitivity analysis for the changes in parameters.

64. DESIGN AND FABRICATION OF A PROTOTYPE SOLAR WOOD PROFILE CUTTING MACHINE

Gangadhar Budireddi, P.H.J.Venkatesh
Department of Mechanical Engineering
Vignan's Institute of Information Technology (A), Visakhapatnam, A.P. India

Sai Kumar Amda
Department of Mechanical Engineering,
JB Institute of Engineering and Technology Hyderabad, Telangana State, India

The Development of country is possible only when people living in villages and tribal areas are given with right employment. Though government took several initiatives for rural development / employment it could not achieve remarkable results due to lack of access to electricity. The major challenges in electrification of these villages and tribal areas are lack of transmission facilities and huge amount of transmission losses which can account up to almost 40%. Due to non accessibility to electricity, no industries could come up in these areas. As a result no employment opportunities are developed. To develop these villages & Tribal areas it is always advisable to create industries with locally available raw materials like wood. If we can develop wood processing units in villages and tribal areas which can run on solar energy, unemployment rates can be drastically reduced and faster development is possible. As a part of my project dissertation I have decided to design and fabricate a proto type of solar wood profile cutting machine.

65. BENEFICIAL ROLE OF CARBON NANOTUBES IN NANO-OPTICS AND NANO-PHOTONICS

[1]Jyothi Budida, Assistant Professor, H&BS Department, Aditya College of Engineering, Surampalem, India
[2] Dr.Kamala Srinivasan, Academic Consultant, Department of Physics, Sri Venkateshwara University, Tirupati

Advances in nanotechnology have allowed the creation of new areas of research, namely NANO-optics or NANO photonics. This field studies the behaviour of light on the nanoscale and the interaction of nanoscale objects with light. Currently, the applications lines are included in optoelectronics and microelectronics, solar cells, sensors, spectroscopy, microscopy, and others. In the fundamental field, Plasmon's and metal optics, Near-field optics, Metamaterials, are studied opening new lines of investigation and breakthrough in the applications. The use of carbon nanotubes (CNTs) in photovoltaics could have significant ramifications on the commercial solar cell market. Three interrelated research directions within the field are crucial to the ultimate success of this endeavour; 1) separation, purification, and enrichment of CNTs followed by 2) their integration into organic solar cells as a photosensitive element or 3) in silicon solar cells as a hole selective contact. All three subtopics have experienced tremendous growth over the past 20 years and certainly the performance of the silicon-based cells is now rapidly approaching that of those on industrial production lines. With a view to these three research areas, the purpose of this Progress Report is to provide a brief overview of each field but more importantly to discuss the challenges and future directions that will allow CNT

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