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Enhancement of Mechanical properties of AlSi5Cu3 Aluminum alloy using TiB_2 reinforcements

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Abstract. In present investigation, ex situ composite of AlSi5Cu3 aluminum alloy reinforced through TiB_2 reinforcement particles has been developed. Different weight percentage of TiB_2 particles were incorporated in liquid melt via stir casting method. Combine effect of stirrer speed (500,700 rpm), and weight percentage (1, 2, 3) TiB_2 particle on mechanical properties were studied. Microstructural study has been carried out using optical microscopy and SEM analysis, which shows homogeneous distribution of particles and improvement in grain size compare to aluminum alloy AlSi5Cu3. Presence of TiB_2 was confirmed using XRD analysis. Improvement in tensile strength and hardness was observed due to homogeneous distribution of particles.

Keywords: Aluminum, TiB_2, Stirring, Composite, Metal,

1. Introduction

Aluminum alloys are widely used in many engineering applications including automobiles, where high mechanical properties such as hardness and tensile strength are required [1]. It is observed that low ductility and poor tribological characteristics are limiting applications of aluminum alloys. Aluminum based composites established as a high performance material due to its low density, good corrosion resistance, high damping capacity, high electrical, thermal conductivities and their high mechanical

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Mobile Biometrics: The Next Generation Authentication in Cloud-Based Databases

Chintan Bhatt [a], S.R. Liyanage[b]

[a] *Charotar University of Science And Technology, India.*

[b]*Faculty of Computing and Technology, University of Kelaniya, Sri Lanka*

In this period of data innovation, cell phones are generally utilized around the world for fundamental correspondences, as well as an apparatus to manage anyplace, whenever data. These situations require a high security level for individual data and protection assurance through individual distinguishing proof against un-approved use if there should be an occurrence of robbery or fake use in an organized society. At present, the most received technique is the check of Personal Identification Number (PIN), which is risky and won't not be anchored enough to meet this prerequisite. As is represented in a review (Clarke and Furnell, 2005), numerous cell phone clients view the PIN as badly arranged as a secret key that is sufficiently confounded and effortlessly overlooked and not very many clients change their PIN frequently for higher security. Subsequently, it is liked to apply biometrics for the security of cell phones and enhance dependability of remote administrations. As biometrics intends to perceive a man utilizing special highlights of human physiological or conduct attributes, for example, fingerprints, voice, confront, iris, stride and mark, this verification technique normally gives an abnormal state of security. Expectedly, biometrics works with particular gadgets, for instance, infrared camera for securing of iris pictures, increasing speed sensors for step obtaining and depends on expansive scale PC servers to perform ID calculations, which experiences a few issues including massive size, operational many-sided quality and greatly surprising expense. Adding a wireless dimension to biometric identification provides a more efficient and reliable method of identity management across criminal justice and civil markets. Yet deploying cost-effective portable devices with the ability to capture biometric identifiers – such as fingerprints and facial images – is only part of the solution. An end-to-end, standards-based approach is required to deliver operational efficiencies, optimize resources and impact the bottom line. While the use of mobile biometric solutions has evolved in step with the larger biometrics market for some time, the growing ubiquity of smartphones and the rapid and dramatic improvements in their features and performance are accelerating the trend. This is the right time to take a closer look at mobile biometrics and investigate in greater depth how they can be used to their potential. Consolidated with cutting edge detecting stages can identify physiological signals and create different signs, numerous biometric strategies could be executed on phones. This offers an extensive variety of conceivable applications. For example, individual protection assurance, versatile bank exchange benefit security, and telemedicine observation. The utilization of sensor information gathered by cell phones for biometric ID and verification is a rising boondock that must be progressively investigated. We review the state-of-the-art technologies for mobile biometrics in this research.

Keywords: Biometric, Cloud Computing, Information, Mobile, Wireless, Security.

Ashish Kumar Luhach · Dharm Singh
Pao-Ann Hsiung · Kamarul Bin Ghazali Hawari
Pawan Lingras · Pradeep Kumar Singh (Eds.)

Communications in Computer and Information Science 955

Advanced Informatics for Computing Research

Second International Conference, ICAICR 2018
Shimla, India, July 14–15, 2018
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Smart Trash Monitoring and Segregation System Using Emerging Technology—A Survey

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Abstract. Global warming and pollution is the most growing problem world–wide. One of the causes is trash generation and it's not recycle properly. Most of the developing and developed countries are now focus on proper management of garbage through its different stages from generation to destroy of garbage. To develop such effective system, modern technologies are used like IoT (Internet of Things), Embedded System, Cloud Computing, Big Data, Data Transfer technology. Using these technologies different approaches is proposed around the world by researchers which cover mainly three aspects, smart waste detection, smart garbage segregation and smart trash collection. This paper covers literature survey on waste monitoring, segregation and collection system with the use of innovative techniques. Merits are, environment become clean, most of the disease are cured which are generated through pollution and recycle of waste.

Keywords: IoT · Cloud computing · Smart trash · Sensors

1 Introduction

Nowadays, IoT is a platform where each device turns into smarter and through intelligent processing, communication turns into revealing. It is a crucial driver for innovation in customer facing, automation, optimization of data driven and business models through all regions. Internet of Things structures a block which helps to achieve an enhanced perception towards real meaning. There are six chief fundamentals of the IoT to deliver its functionalities. 1. Identification 2. Sensing 3. Communication 4. Computation 5. Services 6. Semantics. Furthermore, IoT have some common standards to exemplify, Service Discovery Protocols, Infrastructure Protocols, Influential Protocols and Application Protocols [1]. IoT may be categorized as the container of significant utility factors to demonstrate Self-configuring, Interoperable communication protocols, Dynamic and self-adapting, Context-awareness, Integrated into information network, Intelligent decision making capability and Unique identity [2].

The Swachh Bharat Abhiyan is the utmost important project to make the India a clean country by the Government of India. For instance, the city of Indore entitled

A. K. Luhach et al. (Eds.): ICAICR 2018, CCIS 955, pp. 667–674, 2019.
https://doi.org/10.1007/978-981-13-3140-4_60

HEALTHCARE DATA ANALYTICS AND MANAGEMENT

Advances in ubiquitous sensing applications for healthcare

Volume **Two**

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9 Handling uncertainty in IoT design: An approach of statistical machine learning with distributed second-order optimization

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CHAPTER OUTLINE

1 INTRODUCTION

Emerging development of the Internet of Things (IoT) has offered radical major design engineering challenges, categorized as high reactivity, scalability, heterogeneity, configurability, resource-constrained systems, and robustness. As the IoT paradigm has been composed of parallel development of low cost, low energy autonomous hardware accessories thus there is a potential need for embedded system

Healthcare Data Analytics and Management. https://doi.org/10.1016/B978-0-12-815368-0.00009-9

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SMART HOME: PERSONAL ASSISTANT AND BABY MONITORING SYSTEM

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Abstract

In this era of internet and technology, we want every device to be connected with each other. Meaning of Internet of Things is that each and every device should talk to each other. The proposed system exemplifies a new class of home automation and Baby Monitoring platforms that provide intuitive, cloud-based speech interfaces. This system is a combination of 3 systems; Smart Home Personal Assistant, Online Energy Meter and Advanced Baby Monitoring System. Main feature is that all these three systems talk to each other. In this chapter a general introduction about Internet of Things is given and description about these three systems is provided, detailed information about sensors used in this system is given. Technologies used in this system like Raspberry pi 3, Arduino, sensors, Firebase real time database cloud platform, data analytics, Android, speech recognition (STT, TTS), Image and Video Processing are also made familiar in this chapter.

Keywords: Baby Monitor, Internet of Things (IoT), Speech To Text (STT), Text to Speech (TTS), Data Analytics, Online Energy Meter, Smart Home Personal Assistant.

Dac-Nhuong Le et al. (eds.), Emerging Technologies for Health and Medicine, (259–284)

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CHAPTER 18

DESIGNING A BEAUTIFUL LIFE FOR INDIAN BLIND PEOPLES: A SMART STICK

Aatrey Vyas, Dhaval Bhimani, Smit Patel, Hardik Mandora, Chintan Bhatt

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Abstract

The target of the proposed chapter is to fill in as a concise groundwork to make daze individuals life more intelligent and more solid utilizing the shrewd sensors. The section begins with an outline of the IoT and unavoidable frameworks and proceeds in talking about the nuts and bolts of what are genuine issues looked by daze people groups to the what are diverse arrangements. The part explains the issues looked by a white visually impaired stick and how a smart stick can tackle that issues. Lastly, the section closes with how brilliant sensors can make life of visually impaired individuals more agreeable and how a visually impaired individual can live with no help by lying on the savvy frameworks.

Keywords: IoT, Unavoidable Frameworks, Blindness, Smart system, Shrewd sensors, Visually impaired stick, Savvy frameworks

Dac-Nhuong Le et al. (eds.), Emerging Technologies for Health and Medicine, (245–284)

HEALTHCARE DATA ANALYTICS AND MANAGEMENT

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International Journal of Computer Engineering and Applications,
Volume XII, Special Issue, August 18, www.ijcea.com ISSN 2321-3469

EVALUATING CLASSIFIERS AND FEATURE DETECTORS FOR IMAGE CLASSIFICATION BOVW MODEL: A SURVEY

Mitali Dave, Amit Ganatra, Dippal Israni

Abstract—Bag of Visual Words model is widely used for image classification nowadays. When combined with machine learning approach, it has shown remarkable results for image classification. With various feature detectors available, and multiple classifier choices available, it is unclear which feature detector with what classifier gives the best performance. In this paper, we compare and discuss the performance of four feature detectors i.e. BRISK, ORB, SIFT and SURF combined with six different classification models: AdaBoost, KNN, Logistic Regression, Naive Bayes, Random Forest and SVM; to be applied in Bag of Visual Words approaches for image classification. Based on the experiment conducted, our results show that SURF feature detector and descriptor with SVM classifier outperforms others.

Index Terms—Adaboost, Bag of Visual Words, BoVW, BRISK, KNN, Logistic Regression, Naïve Bayes, ORB, Random Forest, SIFT, SURF, SVM

I. INTRODUCTION

FOR image and scene classification, bag of visual words model has appeared promising recently. BoVW approaches are prompted by document classification in text analysis and have been successfully adapted to image processing as well. BoVW model has been used with a wide area of applications of image processing like the scene, object and image classification [1] [2] [3].

In this paper, the issue of recognizing the common object or scene category of an image has been considered. This paper directs for automatic categorization of an image into one or more relevant classes describing the rendered subject such as a chair, face or camera. In the past ten years, in these kinds of entire image classification tasks, Bag-of-Visual-Words (BoVW) model have been successfully applied. This paper looks into various feature detectors and classifiers used in the bag of visual words model for image classification. Experiments were conducted on the three categories of Caltech 101[4] dataset: Airplane, Helicopter and Motorbike. The performance was evaluated on the basis of classification accuracy and computation time taken for predicting the class of test image.

Data Logging & Visualization using Bolt IoT

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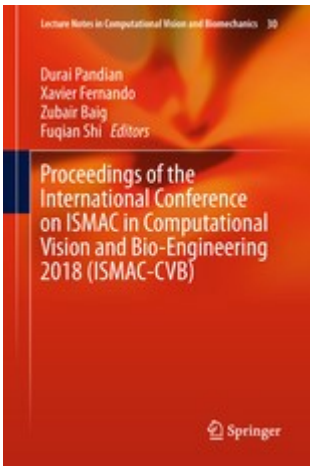
Abstract. The interconnection of ubiquitous and pervasive devices with Internet for data storing, manipulation & analysis purposes captured from sensors which measures physical quantities is termed as Internet of Things. Nowadays due to requirements of efficient use of technologies for welfare of people, has started increasing. Also, the demand for insights collected from the data required for knowledge extraction has increased. This paper proposes a low-cost cloud data logger which is able to capture temperature and humidity data from various locations. The proposed system uses DHT 11 Sensor to capture temperature and humidity data and send it to Bolt Cloud with the help of Arduino. The main objective of this paper is to log weather data to cloud so that we could later analyze it and hopefully find some interesting patterns. Some applications of the data include probability of rainfall, census of wildlife, maintain temperature in data centers and many more.

Keywords: IoT, Bolt, Arduino, Data Logger, Cloud

1 Introduction

When we talk about technologies of the future, we talk about IoT because we not only want our surroundings smart but also sustainable. Due to increasing pollution we are facing climate change right now so it's the right time we looked forward to resolve this issue for us and our future generations. For that reason, we are making IoT enabled environments where humans as well as flora and fauna can prosper. Due to advancement of technologies, we can now develop same topologies using various different types of hardware and software configurations. For instance, there are many applications of temperature and humidity data like prediction of rain, daily minimum and maximum temperature and so on. Weather forecasting applications have seen many advances after introduction of Internet of Things. The main application of temperature and humidity data other than prediction is to monitor and control various appliances. Other applications of the same include controlling and monitoring the air conditioner inside a data center. To make important decisions not only raw temperature and humidity data but also valuable insights are required. For similar purposes, we are using Bolt IoT and Arduino in this proposed system.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Durai Pandian
Xavier Fernando
Zubair Baig
Fuqian Shi Editors
Proceedings of the International Conference on ISMAC in Computational Vision and Bio-Engineering 2018 (ISMAC-CVB)
Springer

Audio and Video Streaming in Telepresence Application Using WebRTC for Healthcare System

Dhvani Kagathara and Nikita Bhatt

Abstract Currently, health care in Lower- and Middle-Income Countries (LMICs) is suffering from shortage of trained physicians in rural areas. The development of certain technologies, particularly in sensors has yielded the birth of mHealth. The main objective of this paper is to develop a telepresence application for a mobile platform. The functionality of the system will include the ability for the doctor to connect with a doctor/patient from a remote location using mobile or web application, and the ability to diagnose patient disease remotely and recommend follow-up care. There is a requirement for low price, well suited, and easy-to-use video communication system. The web real-time communication (WebRTC) permits browsers to set up a peer connection to deliver information and media with real-time conferencing capabilities through simple JavaScript APIs.

1 Introduction

The improvement of financial and social elements regarding a country is said to be complementary to each other. The fields including education or health care are suffering from the social need which sooner or later depicts the financial growth and in the long run, the excellent of lifestyles. India has expected digital adoption, the Indian Healthcare marketplace, that is certainly worth around US$ a 100 billion, will probably develop at a CAGR of 23% to US$ 280 billion through means of 2020 [1]. Including infrastructure or medical specialists via myself will now not be capable about unravel India's considerable unmet desires among health care. It desires to be supported through the era. Scientific technology innovation may remain the tool to redact current care accessible, available then less costly to all by way on lowering the cost of the product or delivery.

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D. Pandian et al. (eds.), *Proceedings of the International Conference on ISMAC in Computational Vision and Bio-Engineering 2018 (ISMAC-CVB)*, Lecture Notes in Computational Vision and Biomechanics 30,
https://doi.org/10.1007/978-3-030-00665-5_162

Compromising Cloud Security and Privacy by DoS, DDoS, and Botnet and Their Countermeasures

Martin K. Parmar and Mrugendrasinh L. Rahevar

Abstract Today, every firm either academic or private or government sectors are using the cloud as a platform to store and communicate information over the internet. Lots of data are being exchanged using various applications software and services. Services are integrated and reused the information over WWW. To effectively deal with all information, people are moving on cloud computing platform because of improving the cost of hardware and software, only pay what you use and setting up infrastructure easily and available for 24×7. Even though lots of advantages of sharing data on a cloud platform, their obvious question arise is that are those data secure and maintain its privacy by the service provider? Data privacy and security is an essential thing in today's world. And to provide security and privacy over cloud computing is often challenging part for many organizations. In this paper, we represent some security challenges for cloud platform as services. We state with two security attack using DDoS and Botnet, and also show some countermeasure.

1 Introduction

Today, use of cloud network providers is rapidly increasing in almost all the sectors of business. There is huge demand for information storage and after that, it can be shared easily anywhere anytime. Services providers of cloud are providing services as SAAS, PAAS, and IAAS [1]. Increasing usages of cloud computing also produce some issues such as security and privacy issues, availability, reliability, and so on. One of the major concerns here is the compromising cloud security and privacy by exploiting malicious attacks. In this paper, we mainly focus effect of DoS, DDoS, and Botnet attack (Fig. 1).

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D. Pandian et al. (eds.), *Proceedings of the International Conference on ISMAC in Computational Vision and Bio-Engineering 2018 (ISMAC-CVB)*, Lecture Notes in Computational Vision and Biomechanics 30,
https://doi.org/10.1007/978-3-030-00665-5_17

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ACCEPTANCE LETTER

March 19th , 2018

To

Martin K. Parmar, Mrugendrasinh L. Rahevar

CHARUSAT, Gujarat
Acknowledgement Number/Paper ID: ISMAC/CVB:1027

Subject: Acceptance Letter – **2018 International Conference on ISMAC in Computational Vision and Bio-Engineering (ISMAC - CVB 2018)** – Reg.

Dear Author,

This is the notification to inform you that your Oral presentation proposal entitled **" Compromising Cloud Security and Privacy by DOS, DDOS, and Botnet and their countermeasures "** submitted to the International Conference on ISMAC in Computational Vision and Bio-Engineering (ISMAC -CVB 2018) organized by SCAD Institute of Technology, Palladam, Tamilnadu, India. on 16-17 May, 2018 has been accepted as a result of blind reviews.

After registration, your paper will be published in the following springer series

Springer - Lecture Notes in Computational Vision and Biomechanics.

On behalf of the organization committee I would like to congratulate you.

Yours sincerely,

Dr.M.Durai Pandian,
Vice Principal,
SCAD Institute of Technology, Palladam, Tamilnadu, India.
svsduraipandian@gmail.com

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Migration and Cooling Aware Approach for Virtual Machine Spreading in Data Centers

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***Abstract* — Server virtualization is a way to utilize efficient resources of the data center. One of the challenges faced by data centers is to decide when, how and which Virtual Machine to migrate. In principle, VMs will migrate from one physical host to a different host without inflicting a significant impact on the application running within them. VM selection decision opens up a huge area for researchers. VM migration cost plays a very important role in the VM selection because it directly depends upon VM performance. R. Ayoub et al. have proposed GentelCool algorithm. The proposed a policy based on GentelCool algorithm which includes VM migration cost. The proposed policy for VM Level spreading considers the migration cost and cooling cost. From the simulation results of existing and proposed VM Level spreading policy conclude that proposed VM level spreading policy provides a higher lead to terms of SLATAH, PDM and SLAV. The improvement in SLTAH is because of swapping of hot VM with colder VM, whereas the improvement in PDM is because of consideration of migration cost with cooling cost.**

***Keywords*—** *Cloud Computing, Virtualization, Virtual Machine (VM), Service Level Agreement (SLA), GentleCool*

I. INTRODUCTION

Cloud computing can be defined as active processing (software & hardware) that is transmitted within the form of administration by a system (usually the Internet). Cloud computing is based on top of the server virtualization technology, which permits different occurrences of Virtual Machines (VMs) running on a solitary physical server. Nowadays cost aware VM migrations are important research issues. There are different costs aware VM migration techniques available such as workload-aware, power cost aware, migration cost aware and so on, yet most existing schemes have centered Service-Level Agreement (SLA) and VM migration cost for VM migration. SLA and VM migration cost aware VM migration utilizes distinctive VM and host selection policies. Recently, Gentlecool [3] algorithm has been proposed which gives cooling aware VM level spreading policy for VM migration. In this algorithm, VM level spreading policy considers just cooling cost in VM selection approach. In work on, considering just cooling cost or VM migration cost is insufficient for VM migration. Thus, we proposed an algorithm which considers cooling cost and VM migration cost for VM selection and assesses the execution of SLA violation(SLAV), for giving better services to the client. Gentlecool VM level spreading algorithm considers just cooling cost for a VM migration purpose. It is paramount to evaluate the performance of the VM spreading algorithm in a situation where VM migration cost, likewise impact for a VM selection purpose.

The rest of the paper is composed as takes after. Section II, relates with associated work. Sections III is about Gentlecool algorithm and its limitations. Section IV is proposed VM level spreading policy and calculated cost model. Section V contains performance evaluation and discusses simulation result. Section VI concludes the paper.

II. RELATED WORK

In context of power management in the virtualized data centers, Verma et al. [4] have developed the matter of dynamic power-aware placement of VMs in hetero-virtual system to boost in the algorithm for collocation of virtual machines. As a result, they optimized to reduce the power consumption and maximize efficiency. Anton et al. have projected efficient adaptive heuristics for dynamic consolidation of virtual machines (VMs) within the use of live migration and change of inactive nodes in sleep mode and thereby minimizing power consumption. They have proposed different VM selection and Host overload/underload detection policies which offer a big reduction in energy consumption, whereas guaranteeing a high level of compliance with the SLA. For VM selection they have used different policies such as Minimum Migration Time, The Random Choice, and The Maximum Correlation. Justin Moore et al. [5], they studied solution-level systems to manage heat generation by setting the temperature of the aware work. Raid Ayoub et al. [3] they have planned to spread VMs using GentleCool approach supported a multi-tier proactive approach.

III. GENTLECOOL ALGORITHM

The Gentlecool algorithm reallocates the work on the virtual machines (VMs) and on the CPU socket. This algorithm has 2 stages, spreading and refinement. The spreading stage keeps

978-1-5386-4273-3/18/$31.00 ©2018 IEEE

STM JOURNALS

Journal of Computer Technology & Applications
ISSN: 2229-6964 (Online), ISSN: 2347-7229 (Print)
Volume 9, Issue 3
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Edge Computing: Applications, Challenges and Opportunities

***Chetan Jayaswal*[1,*], *Padmavathi Bindulal*[2]**
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Abstract

Internet of things is a broad term used to describe how the physical things in real life are connected to each other via the logical network. The data generated by these things is stored on the infrastructure called as the cloud. Cloud computing is rapidly moving towards providing the better cloud services to its end users. Some time-critical applications cannot tolerate the high latency of cloud computing. These circumstances give rise to new era of computing called as the fog and edge computing. This paper primarily focuses on the applications, challenges and opportunities in the edge computing.

Keywords: *Internet of things, Edge Computing, cloud computing*

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INTRODUCTION

Billions of people around the world today use internet for various activities like web browsing, sending mails, social media access, playing games, learning through multimedia content and much more. As more and more people use various devices to access internet, these devices start to communicate with one another giving rise to a notion of smart devices, which can compute, communicate and coordinate. The next generation internet will be internet of smart objects and devices. This will bring new ways of interactions, interfacing and new ways of living. In such environment, the traditional internet architecture will not have much to offer. It will be serving as a backbone for Internet-of things (IoT). In this direction the term IoT can be described as: I) Global network of smart objects; II) A set of supporting technologies; III) A group of services and applications [1]. IoT uses cloud infrastructure to store the data that is generated by the smart objects and devices. Cloud is network of servers which are remotely located, and which can interact, store and process the data generated by the devices. Cloud applications are generally user-driven i.e., a lot of data are generated by users. Using cloud as a centralized server poses problems in communication between devices because the cloud servers are located at a huge distance from the devices. The other forms of computing that looks beyond the clouds is edge and fog computing.

In this paper, the focus is explored to give the insights about the concepts of fog and edge computing and the issues related to them. The paper is organized as follows: the very next section discusses the edge computing in detail; subsequent section describes the applications of edge computing; a separate section discusses the challenges and opportunities and last section is for conclusions and future scope.

EDGE COMPUTING

Edge computing is the optimized cloud system that takes away the control from the centralized core to the logical extremes called as the edges (Figure 1).

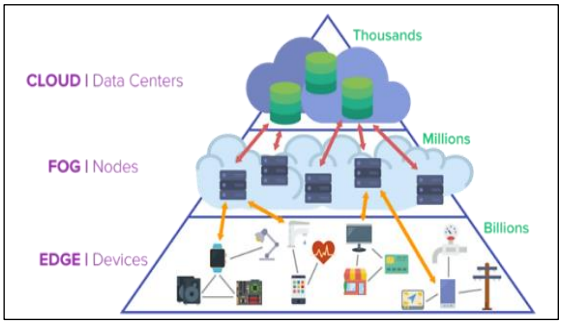
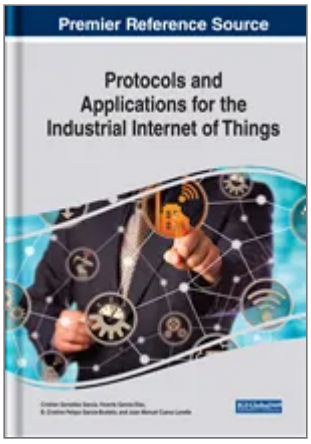


Fig. 1: *Edge Computing Architecture [2].*



Protocols and Applications for the Industrial Internet of Things

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Indexed In: SCOPUS

Release Date: April, 2018

Pages: 356
DOI: 10.4018/978-1-5225-3805-9

ISBN13: 9781522538059
ISBN10: 1522538054
EISBN13: 9781522538066

Hardcover: $172.00
List Price: ~~$215.00~~
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Description

The Internet of Things (IoT) has become a major influence on the development of new technologies and innovations. When utilized properly, these applications can enhance business functions and make them easier to perform.

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Smart City Based on MQTT Using Wireless Sensors

Monika Bharatbhai Patel
Charotar University of Science and Technology, India

Chintan Bhatt
Charotar University of Science and Technology, India

Hamed Vahdat-Nejad
University of Birjand, Iran

Hardik B. Patel
Epsilon Electronics, India

ABSTRACT

The internet of things can involve a huge number of connected devices and sensors for the betterment of our lives and businesses. Sensors are the main part of IoT. The main target of this chapter is to develop an IoT-based information observing system for specific areas like home, cities, industries, hospitals, etc. In this system, the environmental data of different elements, for example, temperature, humidity, pressure, should screen and get a redesign with a particular time interval. The authors use Raspberry Pi 3 and MQTT to observe information over a remote area and get an update with it anyplace in the world. They transmit the environmental data to the cloud server sent by Raspberry Pi 3. There, the authors can monitor data in both modes (online and offline).

DOI: 10.4018/978-1-5225-3805-9.ch009

Ashish Kumar Luhach · Dharm Singh
Pao-Ann Hsiung · Kamarul Bin Ghazali Hawari
Pawan Lingras · Pradeep Kumar Singh (Eds.)

Communications in Computer and Information Science 955

Advanced Informatics for Computing Research

Second International Conference, ICAICR 2018
Shimla, India, July 14–15, 2018
Revised Selected Papers, Part I

ICAICR

Part 1

Springer

Communications in Computer and Information Science 955

Commenced Publication in 2007
Founding and Former Series Editors:
Phoebe Chen, Alfredo Cuzzocrea, Xiaoyong Du, Orhun Kara, Ting Liu, Dominik Ślęzak, and Xiaokang Yang

Editorial Board

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Preface

The Second International Conference on Advanced Informatics for Computing Research (ICAICR 2018) targeted state-of-the-art as well as emerging topics pertaining to advanced informatics for computing research and its implementation for engineering applications. The objective of this international conference is to provide opportunities for the researchers, academics, industry professionals, and students to interact and exchange ideas, experience, and expertise in the current trends and strategies in information and communication technologies. Moreover, participants were informed about current and emerging technological developments in the field of advanced informatics and its applications, which were thoroughly explored and discussed.

ICAICR 2018 was held during July 14–15 in Shimla, India, in association with Namibia University of Science and Technology and technically sponsored by the CSI Chandigarh Chapter and Southern Federal University, Russia.

We are very thankful to our valuable authors for their contribution and our Technical Program Committee for their immense support and motivation for making the first edition of ICAICR 2018 a success. We are also grateful to our keynote speakers for sharing their precious work and enlightening the delegates of the conference. We express our sincere gratitude to our publication partner, Springer, for believing in us.

July 2018

Ashish Kumar Luhach
Dharm Singh
Pao-Ann Hsiung
Kamarul Bin Ghazali Hawari
Pawan Lingras
Pradeep Kumar Singh

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About the Editors

Suresh Chandra Satapathy is currently working as Professor, School of Computer Engineering, KIIT Deemed to be University, Bhubaneswar, India. He obtained his Ph.D. in computer science and engineering from Jawaharlal Nehru Technological University (JNTU), Hyderabad, India, and M.Tech. in CSE from NIT Rourkela, Odisha, India. He has 27 years of teaching experience. His research interests are data mining, machine intelligence, and swarm intelligence. He has acted as program chair of many international conferences and edited six volumes of proceedings from Springer LNCS and AISC series. He is currently guiding eight scholars for Ph.D. He is also a senior member of IEEE.

Amit Joshi is a young entrepreneur and researcher who holds an M.Tech. in computer science and engineering and is currently pursuing research in the areas of cloud computing and cryptography. He has 6 years of academic and industrial experience at the prestigious organizations in Udaipur and Ahmedabad. Currently, he is working as Assistant Professor in the Department of Information Technology, Sabar Institute of Technology, Gujarat, India. He is an active member of ACM, CSI, AMIE, IACSIT Singapore, IDES, ACEEE, NPA, and many other professional societies. He also holds the post of Honorary Secretary of the CSI's Udaipur Chapter and Secretary of the ACM's Udaipur Chapter. He has presented and published more than 30 papers in national and international journals/conferences of IEEE and ACM. He has edited three books on advances in open-source mobile technologies, ICT for integrated rural development, and ICT for competitive strategies. He has also organized more than 15 national and international conferences and workshops, including the international conference ICTCS 2014 at Udaipur through ACM's ICPS. In recognition of his contributions, he received the Appreciation Award from the Institution of Engineers, Kolkata, India, in 2014 and an award from the SIG-WNs Computer Society of India in 2012.

Survey and Evolution Study Focusing Comparative Analysis and Future Research Direction in the Field of Recommendation System Specific to Collaborative Filtering Approach

Axita Patel, Amit Thakkar, Nirav Bhatt and Purvi Prajapati

Abstract Recommendation system is a sub-ordinate of information filtrate system that provides users with suggestions for items a user may want. It plays a censorious role in wide range of online shopping, e-commercial services, and social networking applications. In recent years recommendations have changed different ways of communication between users and websites. Recommendation system sorts huge amount of data to determine interest of users and makes search easier. For that purpose many methods have been used. This paper covers different approaches which are used in recommendation system which are: collaborative approach, content-based approach, and hybrid recommendation approach. We have also mentioned several issues that come across recommendation systems.

Keywords Recommendation system · Collaborative filtering · Content-based approach · Hybrid approach

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S. C. Satapathy and A. Joshi (eds.), *Information and Communication Technology for Intelligent Systems*, Smart Innovation, Systems and Technologies 106,
https://doi.org/10.1007/978-981-13-1742-2_16

Smart Innovation, Systems and Technologies 84

Suresh Chandra Satapathy
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Information and Communication Technology for Intelligent Systems (ICTIS 2017) - Volume 2

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ISSN 2190-3018 ISSN 2190-3026 (electronic)
Smart Innovation, Systems and Technologies
ISBN 978-3-319-63644-3 ISBN 978-3-319-63645-0 (eBook)
DOI 10.1007/978-3-319-63645-0

Library of Congress Control Number: 2017946694

Printed on acid-free paper

This Springer imprint is published by Springer Nature
The registered company is Springer International Publishing AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

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Recommendation System for Improvement in Post Harvesting of Horticulture Crops

Kinjal Ajudiya(✉), Amit Thakkar, and Kamlesh Makwana

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Abstract. Horticulture includes tropical and subtropical fruits, vegetables, spices, flowers, medicinal and aromatic plants. Horticulture sector is a major growth of Indian Agriculture. India is second largest producer of fruits and vegetables in the world. But the post-harvest loss is because of weak supply chain entities like storage facilities, bad transportation facility, market facility, and not proper packaging, not use of modern techniques, not proper post-harvest management. Due to post harvest loss actual need of fruits does not satisfy and so that need to import the fruit from outside the country. If import of fruit is higher than the export then it will impact on balance of payment of India, value goes negative. Post-harvest loss indirectly affect on our Indian Economy. By using modern technologies post-harvest loss can be reduced. For example, Geographic Information System (GIS) can be used for analysis of spatial data and helps also in decision making in problem. Location based recommendation system will also help to recommend the location of cold storages and establishment of new cold storages.

Keywords: Geographic information system · Recommendation system · Post-harvest management · Markets · Cold storages

1 Introduction

Horticulture is a branch of Agriculture includes fruits, vegetables, spices, flowers and medicinal and aromatic plants. Horticulture sector is a major driver growth of Indian Agriculture. In 1991–92, the total land under horticultural crops was reported to be 12.77 million hectares, in 2012–13 total area occupied by horticulture crop is 23.69 million hectares and total production is 268.8 Million Tones an increase of 85% [10]. Huge amount variety of production in India like fruits, vegetables, flowers, aromatic crops is because India is endowed with heterogeneous area and characterized by a great diversity of agro climatic zones. Post harvest stage is the stage of crop production followed by the harvest determines the final quality as crop can be sold as a fresh consumption or it can be used as a ingredient in a processed food product. Crop is removed from its parent plant, it started to deteriorate. Post harvest handling is required at this stage. Post harvest

S.C. Satapathy and A. Joshi (eds.), *Information and Communication Technology for Intelligent Systems (ICTIS 2017) - Volume 2*, Smart Innovation, Systems and Technologies 84, DOI 10.1007/978-3-319-63645-0_61

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ISSN 2190-3018 ISSN 2190-3026 (electronic)
Smart Innovation, Systems and Technologies
ISBN 978-3-319-63644-3 ISBN 978-3-319-63645-0 (eBook)
DOI 10.1007/978-3-319-63645-0

Library of Congress Control Number: 2017946694

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ISSN 2190-3018 ISSN 2190-3026 (electronic)
Smart Innovation, Systems and Technologies
ISBN 978-3-319-63644-3 ISBN 978-3-319-63645-0 (eBook)
DOI 10.1007/978-3-319-63645-0

Library of Congress Control Number: 2017946694

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Comprehensive and Evolution Study Focusing on Comparative Analysis of Automatic Text Summarization

Rima Patel(✉), Amit Thakkar, Kamlesh Makwana, and Jay Patel

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Abstract. In the escalating trend of atomization and online information, text summarization bolster in perceiving textual information in the form of summary. It's highly tedious for human beings to manually summarize large documents of text. In this paper, a study on abstractive and extractive content rundown strategies has been displayed. In Extractive Text Summarization it talk about TF-IDF, Cluster based, Graph theory, Machine learning, Latent Semantic Analysis (LSA) and Fuzzy logic approaches. Abstractive rundown techniques are ordered into two classes i.e. Structured based approach and Semantic based approach. In Structure Based approach it talk about Tree based, Template based, Ontology based, Lead & Phase based and Rule based method. In Semantic Based Approach it talks about Multimodal semantic, Informative item based and Semantic graph based method. The central idea of this method has been elaborated further, apart from idea, the advantages and disadvantages of these methods have been procured.

Keywords: Abstractive Text Summarization · Extractive Text Summarization

1 Introduction

The substantial and superfluous amount of information depicting on World Wide Web (www), the area of Text Summarization is critical in the field of information retrieval. Nowadays, people are used to with the web to discover data through [1] data recovery instruments, for example, Google, Yahoo, Bing etcetera. The way toward consolidating a source message into a feasible form safeguarding its data substance is called outline.

Summarization is a tedious and erroneous job. As consequences, summarization has become the pioneer need for the technical world. Illustrating a logical summarization of the documents which bolster up the most viable information.

As technological depended life lead summarization for various purpose and in many domain for example, news articles outline, email synopsis, short message of news on portable, and data [2] rundown for businessperson, government authorities, specialists include with internet searchers to get the synopsis of significant pages.

On the internet, there is numerous such examples like Text Compacter, Simplify [2], Tools4Noobs, FreeSummarizer, WikiSummarizer and SummarizeTool are online

S.C. Satapathy and A. Joshi (eds.), *Information and Communication Technology for Intelligent Systems (ICTIS 2017) - Volume 2*, Smart Innovation, Systems and Technologies 84, DOI 10.1007/978-3-319-63645-0_43

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2017 IEEE International Conference on Recent Trends in Electronics, Information & Communication Technology (RTEICT-2017), May 19-20, 2017, India

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Rice Quality Analysis Based on Physical Attributes Using Image Processing Technique

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Abstract— this review paper is for quality control of rice which is most important crop for human as well as in food market using image processing techniques and computer vision. Basic problem in Indian food industry that performs quality check manually by human inspectors which is non-reliable, costly and time consuming.

Keywords—Image processing, quality analysis , rice quality analysis, quality check , machine vision Introduction

I. INTRODUCTION

Image processing manipulates image for performing some operations on targeted image to get an improved and desirable image. And extort some valuable information from input image. Nowadays, image processing is hastily growing technologies. All types of data have to go through three general phases while using digital image processing technique which are pre-processing, enhancement, and display, information extraction.

Rice quality analysis is one of the research topics of machine vision. Several researchers suggest that object shape is more informative than its appearance properties such as texture and colour vary between object instances more than the shape. But it cannot give accurate result. We also identify the rice integrity problem. Rice integrity means touching of seeds while taking samples. There are two types of touching 1. Line touching and 2 .point touching. There are several advantages and disadvantages for every edge detection method For example every technique detects part of real edges and some unreal edges.

The main purpose of the proposed method is, to offer an alternative way for quality control and analysis which reduce the required effort, cost and time. Image processing is significant and advanced technological area where important developments have been made. [Efforts are being geared to replace the traditional human sensory panel.]

Following Section cover the problem for the assessment of rice grain seeds on the basis of shape and size. In the same section we discussed traditional and manual methods used for the measurement of grain. In Section III we discuss about the method planned for calculating parameters like length, breadth and length-breadth ratio. Section IV discusses the evaluation for the quality of rice grains based on image processing and analysis. It also includes results based on quality analysis for length, breadth and length-breadth ratio. Section V provides the conclusion of the proposed method.

II. PROBLEM DEFINITION

In agricultural and farming production quality control and analysis of manufactured goods is vital. Quality of grain is analyzed visually by veteran person and technician. But the effect of such measurement is changing in results and prolonged. The excellence and quality also influenced by the mood and atmosphere of technician; so to overcome the shortcoming occurred due to conventional methods advanced technique i.e. Image processing technique is projected, to Maintaining the Integrity of the Specifications.

A. Rice Quality And Classification

The huge apprehension with quality analysis and control due to new market limitations in current duration has become important that it demanded a technology of process approach more consistent tests and new methods of monitoring product quality[1]. In food industry after harvesting of crop, classification and grading of crop is perform based on quality parameters.

The conventional methods used for grain shape and size measurement are grain shape tester, dial micrometer and graphical method, but these methods are very lengthy. In above equipment we can measure breadth and length of one grains at a time. The result of this methods is also lengthy and costly and higher possibility of human errors, So it requires high accuracy to assure customers need as well as to conquer restrictions of manual.[1]

The work directed to quality analysis on the basis of the measurement of physical parameter i.e. grain size and shape using image processing techniques.

III. MATERIALS AND METHODS

MATLAB R2014b s/w is used to implement proposed image processing algorithms for grain quality analysis. Digital Color camera is used to image acquisition and using USB cable captured image can be stored in system

The flow of proposed image processing algorithm is as follow shown in fig. 1, which includes some basic steps. Seeds are haphazardly placed on black-background for image acquisition. Image is captured and stored for further process of analysis. In first step pre-processing is performed and noise is removed from the input image using filter. Shrinkage morphological algorithm used for removing the touching seeds which is perform in second step. In third step edge detection is perform which is find the region of boundaries. In forth step

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The charged particles can cause adverse effects on spacecraft and electronics components. Radiation effects from high energy particles cause spacecraft surface charging, degradation or permanent failure of the electronic components and sub systems by single event effects, displacement damages and ionizing dose effects in the spacecraft. The effects of ion-induced charge transients can be divided in the basic three categories: Total ionizing dose (TID), linear energy transfer (LET) and Single event upset (SEU).TID effect is accumulation of ionizing energy deposited over a long period on semiconductor materials. TID occurs mostly due to the electrons and protons, which can cause failure of device. The total energy loss or transfer to the material per unit distance of travel trough the material is called LET Electronic devices can be disturbed by the passage of energetic electrons, protons or heavier ions that may alter the state of a circuit, producing "single event effects". SEU and multiple-bit upset (MBU) which change the logic state of internal nodes of the circuit. It can be reset by different electrical operations. These errors are called soft errors which are recoverable.

Keyur Mahant
Hiren Mewada
Amit Patel

Space Radiation Monitoring Instrumentation

Keyur Mahant was born in Cambay, India on August 2, 1986. He received B.Tech in Electronics and communication from C U Shah College of engineering and technology, India in 2008. He has also received M.Tech in Communication system from CHARUSAT University, India in 2011. Currently, he is pursuing his PhD in the field of RF and Microwave.

978-613-6-71825-5

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FEC 2018
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FUSION ENERGY
CONFERENCE
22–27 October 2018
Ahmedabad, India
Programme and Abstracts
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Institute for Plasma Research

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Id	Presenter		Title
FIP/P3-40	J. Jiang	China, P. R.	Development of HINEG and its Experimental Campaigns
FIP/P3-41	V. M. Chernov	Russian Fed.	Radiation Properties of the Metal Structural Materials during Low-Temperature Damaging Irradiation
FIP/P3-42	C. S. Sasmal	India	Effect of Simulated Postweld Heat Treatment on the Microstructure and Mechanical Properties of IN-RAFM Steel
FIP/P3-44	A. Attri	India	Ion Irradiation Induced Modifications in Tungsten Foils
FIP/P3-45	T. Tulenbergenov	Kazakhstan	Tungsten Fuzz Formation on the Nitrided Tungsten Surface
FIP/P3-46	H. L. Swami	India	Neutronics Experiment for Design Validation of Indian TBM Shield Module
FIP/P3-47	P. Bharathi	India	Study on Production and Extraction of Negative Ion Impurity Ions in a Caesiated Negative Ion Source
FIP/P3-48	A. Patel	India	3 MW Dual-Output High Voltage Power Supply Operation: Results for Accuracy, Stability and Protection Test
FIP/P3-49	A. J. Deka	India	Evaluation of Beam Properties of a Negative Hydrogen Source by Doppler Shift Spectroscopy
FIP/P3-50	S. S. Mukherjee	India	Thermohydraulic Analysis of Forced Flow Helium Cooled Cryopanels of Cryopump Using Venecia Code
FIP/P3-51	J. S. Mishra	India	Pellet Fuelling Prospects and Injector System for ADITYA-U Tokamak
FIP/P3-52	P. Bhatt	India	Performance of Transmission Line System at 42.0 ± 0.2 GHz for an Indigenous Gyrotron System
FIP/P3-53	Y. M. Jain	India	Development and Qualification of Passive Active Multijunction (PAM) Launcher for LHCD System of ADITYA-Upgrade Tokamak
FIP/P3-54	R. Gangradey	India	Effect of Sorbent Selection and Geometrical Arrangement of Cryopanels on Pumping Speed of Cryopump
FIP/P3-55	L. Hao	China, P. R.	Advanced Capabilities of Multifunctional Calculation Programme SuperMC3.2 for Complex Nuclear System

Continued...

PERFORMANCE OF TRANSMISSION LINE SYSTEM AT 42±0.2GHZ FOR AN INDIGEOUS GYROTRON SYSTEM

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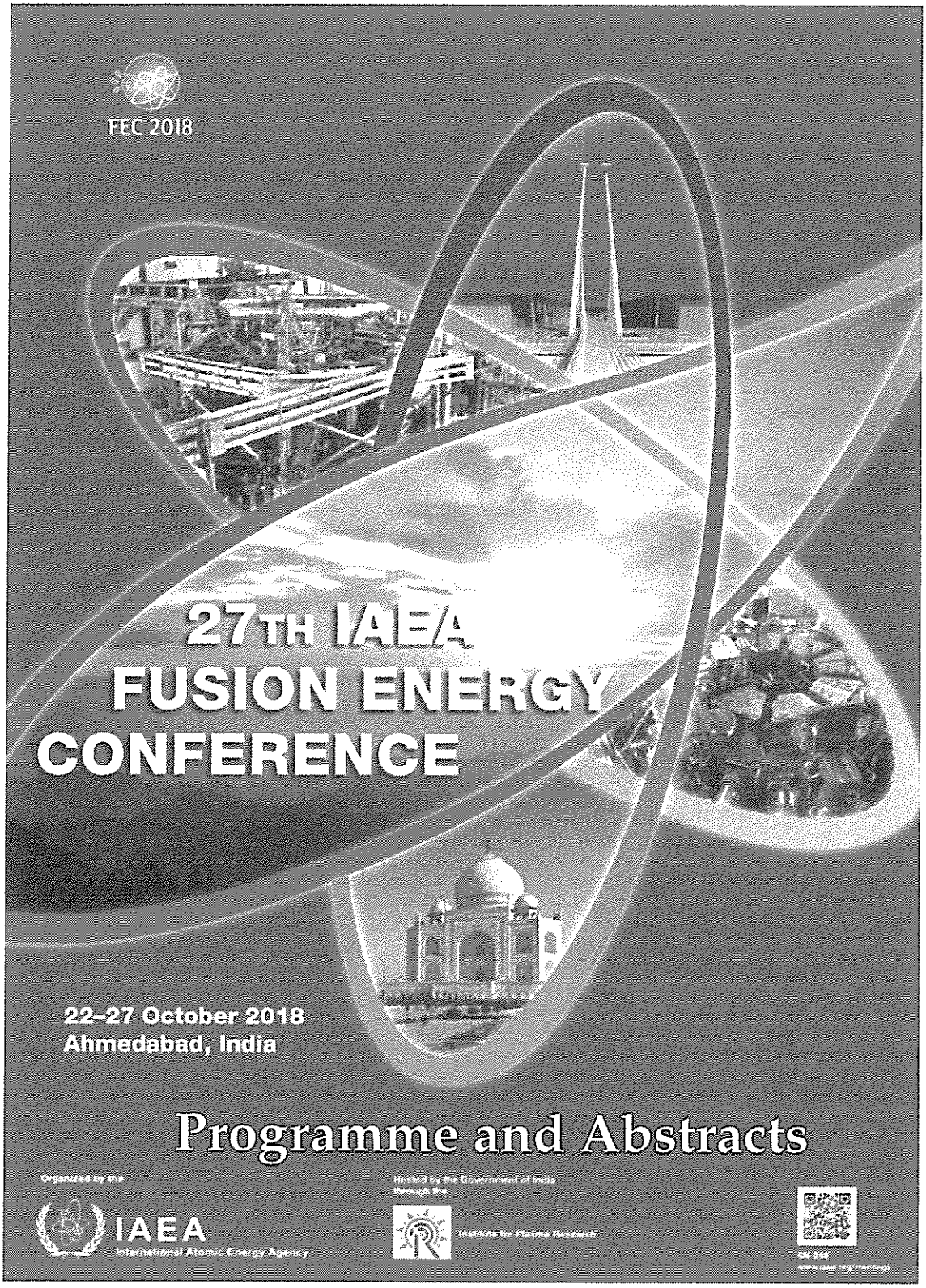
Abstract

In high microwave power applications like gyrotron, transmission line system, calorimetric dummy load, etc, requires design, modeling, simulation and evaluation of transmission line system before fabrication of the same is undertaken. Under the aegis of Department of Science and Technology (DST), a multi-institutional program for the development of a gyrotron operating at 42±0.2GHz/200kW/3secs in TE_{03} mode has been undertaken. It is currently in an advance stage of test and commissioning at Institute for Plasma Research (IPR). It is desired for plasma applications that the output mode of gyrotron in TE_{03} mode is to be converted to HE_{11} mode for efficient coupling to plasma. The HE_{11} mode (TEM_{00} mode), has an electric field distribution very close to that of an ideal Gaussian mode. This gaussian like mode is preferred for high-power transmission through overmoded corrugated waveguides, which gives insertion loss lower than that of any other modes. The proposed design of transmission line system converts unpolarized TE_{03} mode into polarized HE_{11} mode. The ripples walled mode converters are designed for converting TE_{03} to TE_{01} in two steps. TE_{01} mode is converted to TM_{11} by bending a smooth waveguide at an angle of 34.94°. Finally TM_{11} mode is converted to HE_{11} mode. Miter bend for TE_{01} mode andHE_{11} mode are also designed. The designed corrugated waveguide operates at 42±0.2GHz. The Final design of all the components are verified using simulation studies carried out in CST-MWS. Performance optimization has been carried out prior to fabrication process. At this point in time, fabrication of many of the mode converters has been completed and miter bends are under mechanical fabrication process. As a part of a design, transmission line system is mechanically compatible to high vacuum and 1bar pressurization. The system includes two design approaches whose performances are compared in terms of insertion loss, bandwidth and cost effective manufacturing. Both the proposed design approaches of transmission line system have total insertion loss of 1.3 to 1.5dB. The bandwidth of first design approach is wider as compared to second. Flexibility of manufacturing process of transmission line system is an advantage of second approach. The Salient point of design and simulation studies of transmission line system are discussed and highlighted in the manuscript.

1. INTRODUCTION

The recent progress using high power millimeter waves such as electron cyclotron resonance heating (ECRH), lower hybrid current drive (LHCD) for plasma production, current drive and other applications. These applications make use of high-power millimeter-wave generated from the gyrotron for efficient plasma coupling [1]. High power gyrotron with quasi optical internal mode converters are currently in wide use. The indigenously designed and developed gyrotron under aegis of DST is in advance stage of commissioning at Institute for Plasma Research. (IPR). The operating frequency of the gyrotron is 42±0.2GHz/200kW/3secs in TE_{03} mode. It is preferred to couple microwave power to plasma in HE_{11} mode. In order to achieve this, external mode converters are designed [2-3]. In this approach optimization of physical dimensions of mode converters is attempted.

The output diameter at the mouth of gyrotron is Ø85mm. with this diameter optimization of mode converters and transmission line systems is difficult. The length of the mode converters are long and fabrication difficulties are encountered. Two linear down tapers from Ø85 are used to reduce the diameter to Ø31.75mm. Based on these geometrical parameters the proposed system is evaluated. The calculation of the cut-off frequency and maximum power handling capacity has been carried out. The cut-off frequency for respective mode converters is calculated for optimized radius.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Ahmedabad, India
Programme and Abstracts
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Institute for Plasma Research

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Id	Presenter		Title
EX/P4-21	S. N. Pandya	India	A Diagnostic Approach for the Detection of Spatially Distributed Low Energy Confined Runaway Electrons in the ADITYA-U Tokamak by Means of Synchrotron Emission Imaging in the Sub-Millimetre Wavelength Band
EX/P4-22	J. Kumar	India	Design and Testing of X-Mode Reflectometry System for Coupling Studies of Lower Hybrid Waves in ADITYA-U Tokamak
EX/P4-23	S. Aggarwal	India	Design and Development of Passive Charge Exchange Neutral Particle Analyser for ADITYA-U Tokamak
EX/P4-24	L. M. Awasthi	India	Excitation of Electron Temperature Gradient (ETG) Turbulence and Effect on Plasma Transport in LVPD
EX/P4-25	K. Ajay	India	ADITYA Experimental Results of Core Ion Temperature Measurements on ADITYA Tokamak Using Four Channel Neutral Particle Analyser
EX/P4-26	P. K. Srivastava	India	Chord Average Density Measurement Using Microwave Interferometry in LVPD
EX/P4-27	A. K. Sanyasi	India	Investigations on Growth of Quasi-Longitudinal (QL) Whistlers with Energy Scaling of Energetic Electrons in LVPD
EX/P4-28	K. K. Mishra	India	Fast Wave Induced ICRF Plasma Expansion in ADITYA Torus
EX/P4-29	N. Patel	India	Gas Fuelling Control System of ADITYA Tokamak
EX/P4-30	R. Rajpal	India	Integrated System Electronics and Instrumentation; Operation and Diagnostic for ADITYA-U Tokamak
EX/P4-31	S. Aich	India	Plasma Column Position Measurements Using Magnetic Diagnostics in ADITYA-U Tokamak
IFE/P4-1	G. M. Elaragi	Egypt	Experimental Discharge Characterization of IEC Plasma Device
IFE/P4-4	H. Hora	Australia	H-^{11}B Fusion Reactor with Extreme Laser Pulses for Non-LTE Ignition
IFE/P4-6	Y. Mori	Japan	Development of Shell Injection System for the Future IFE Power Plant

Continued...

DESIGN AND TESTING OF X-MODE REFLECTOMETRY SYSTEM FOR COUPLING STUDIES OF LOWER HYBRID WAVES IN ADITYA-U TOKAMAK

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Abstract

A new passive active multijunction antenna (PAM) has been designed and fabricated for ADITYA-U tokamak [1]. The PAM antenna has the ability to couple lower hybrid waves (LHW's) into the plasmas near cut-off densities. The coupling of LHW's depends on plasma density and its profile near the mouth of the antenna. To determine these plasma parameters, experimentally, an X-mode reflectometry system has been designed. The reflectometery system is designed to operate in the frequency range from 26 GHz to 36 GHz and would cover a density range from ~$1x10^{17}$ m^{-3} (i.e. Scrap Of Layer (SOL) density) to $5x10^{18}$ m^{-3} with a toroidal magnetic field of 1.5 Tesla at major radius (R_0) of the tokamak. The total frequency band is swept in 100 microsecond, as a trade-off between technological difficulties and to avoid fast density fluctuation for better phase tracking. The ADITYA reflectometer is built to operate in frequency modulation continuous mode (FW-CM) or at a fix frequency mode for density fluctuation study. The reflectometery consists of two parts, i.e., the transmitter and the receiver. The transmitter mainly consists of microwave source, amplifier, a single sideband modulator (SSBM), frequency multiplier and a horn antenna to launch X-mode into the plasma. Similarly the receiver end consists of horn antenna, amplifier, mixer and de-modulator. In the de-modulator section, a quadratic demodulation (IQ) is used to extract in-phase and quadrature-phase information from the reflected signal. Finally, an ADC with 12 bit resolution will convert the analog signal in to a digital signal which will be processed through a FPGA based data acquisition system. Two sectorial E plane horn antennas are chosen so that one may be used for launching microwave power into the plasma and the other for receiving the reflected signal from the plasma. The limited space available near the radial port which houses both, the PAM antenna and the horn antenna, accounts for the choice of sectorial E-plane horn antenna. A microwave broad band window is designed to interface the horn antennas and the microwave hardware as the antennas will be placed inside vacuum vessel of ADITYA-U tokamak.

1. INTRODUCTION

The coupling of RF power at lower hybrid range of frequency and ion cyclotron range of frequency is strongly depends on edge plasma density and its gradient [2]. It is also reported that the radial transport, H-mode transition and plasma density fluctuation studies required an accurate measurement of electron density profile in edge plasma region. Single Langmuir probe have been used for measurement of plasma density in front of LHCD antenna and ICRF antenna in ADITYA tokamak. Fixed Langmuir probe gives only the single point measurement of electron density. To measure the electron density with appreciable temporal and spatial resolution an X mode reflectometry is designed which will be employed to understand the coupling of LHCD power in ADIYUA-U tokamak. The first X mode reflectometry was implemented on Petula- B tokamak to measure electron density profile in the year 1985[3]. Since 1985, X mode reflectometry is recognized as a potential diagnostics tool for measuring edge plasma density profile [4, 5, 6, 7, 8, 9]. In X mode, the cut off frequency depends on local electron plasma density as well as toroidal magnetic field.

X mode reflectometer in the frequency range from 26 GHz to 36 GHz is suitable to measure edge plasma density. The reflectometer will also operate in fixed frequency mode for density fluctuation studies. This paper is arranged in such a way that Section 2 covers, the conceptual design of reflectometer system. Test results of different microwave components are reported in section 3. Transmission and receiving end of the microwave system consists of E plane sectorial horn antenna, vacuum window and antenna mounting are described in section 4. Finally in section 5 the density inversion process based on Botollier-curtet algorithm is also discussed.

2. WAVE PROPAGATION AND REFLECTION

Reflectometry relies on the propagation of low power microwave in plasma. Launched microwave is reflected from the plasma when it sees the cut off surface. There are two types of modes, which can be launched in the plasma depending upon the cut off frequency for X-mode and O-mode. In O mode polarization ($k \perp B_T$ and $E \parallel B_T$) probing frequency depends on electron plasma density and in X mode polarization ($k \perp B_T$ and $E \perp B_T$) probing frequency depends on electron plasma density as well as toroidal magnetic field.

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Paper ID: 70

Performance Analysis of 8 x 1 Complex Orthogonal Space Time Block Code for MIMO System Under Various Transmit Antenna Selection Scheme with Reduced feedback bit

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Abstract— *In this article, the performance analysis of complex orthogonal space-time block codes (COSTBCs) [1] under various transmit antenna selection schemes (TAS) with reduced feedback bit in a Rayleigh fading channel have been analyzed. There are various three transmit antenna selection schemes Out of them, scheme-I selects best 8 transmit antenna from total of Lt transmit antennas, which require large no. of feedback bit. Scheme-II selects best four group of each group consist of two transmit antenna, which require less no. of feedback bit compare to scheme-I. Scheme-III selects best two transmit antenna and rest of the six antenna select randomly, which require less no. of feedback bit compare to scheme-I and scheme-II. Simulation performance wise, Scheme-I gives best compare to Scheme- II, Scheme-III. But within this all schemes, Scheme-III require less feedback bit compare to other schemes. The simulation results of all three Schemes of TAS have been presented in the article.*

Keywords— *Complex orthogonal space-time block codes (COSTBCs) transmit antenna selection (TAS) feedback bit*

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Paper ID: 78

Split Ring Resonator Inspired Dual Band Planar Antenna for GSM and WiMAX Applications

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Abstract— *This paper presents dual-band microstrip antenna for Global System for Mobile Communications (GSM) and Worldwide Interoperability for Microwave Access (WiMAX) applications. The split ring resonators structure driven antenna operates at 900 MHz and 3.3 GHz respectively. Return loss achieved at both the resonance frequencies are 22.26 dB and 18.97 dB respectively. The proposed antenna is developed on a cost-effective FR-4 substrate with relative permittivity 4.4 and tangent loss of 0.002 and partial ground plane. The bandwidth of the proposed antenna is 3.01% and 4.26% respectively. The design and fabrication procedure along with both simulated and measured results are presented and discussed in this paper. Designed antenna deliberates good performance and solution for both applications.*

Keywords— *Metamaterial Antenna, Partial ground plane, Split ring resonator, GSM, WiMAX*

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Paper ID: 129

Design & Development of Smart Voting Machine based on IoT Platform

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Abstract— *The Proposed system describes the design of smart & secure electronic voting machine based on the IoT platform. IoT stands for Internet of things which is the network of physical devices as sensors, computing devices, objects which are provided with unique identifier and able to transfer the data over the internet. Functionality of the suggested system is divided into two specific phase. One is user authentication and another is user voting. The suggested system is beneficial over the traditional system, as tradition system is time consuming and also not authenticated. Authentication process can be done using Fingerprint authentication. Fingerprint database of all the voters stored in the system initially. If any person wants to vote to any party, the authentication of respective person is to be done by fingerprint matching process. Once the fingerprint matches successfully, the person can vote to any specific party. As the suggested system is to be design on the IoT platform, the statistics of the percentage voting of individual party is to be uploaded on the web server. Due to the fingerprint authentication method, malfunctioning like fake voting and repeat vote can be avoided. As system is based on the fingerprint authentication, in future it can be link with the Aadhar card of the respective person.*

Keywords— *Electronic voting machine, IoT*

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Paper ID: 45

Ring shape Dielectric Resonator Antenna for WLAN application

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Abstract— *Wireless communication has significant role in modern communication systems. The antenna is very crucial component for any wireless communication devices. Planar Dielectric Resonator Antennas (DRAs) have attracted researchers' mind because of their inherent characteristics of low profile, compactness, light weight and radiation efficiency. In this paper, cylindrical ring shaped dielectric resonator antenna for WLAN communication is designed, fabricated and presented. The fabricated prototype shows extremely high correlation to simulation results. A ring shaped micro strip feed is engineered to optimize the reflection coefficient. The antenna is fabricated on FR4 substrate material for cost effectiveness and robust mechanical properties. Antenna has partial ground plane to improve the bandwidth. Overall Antenna dimensions is 48 x 75 mm^2. The measured bandwidth is in order of 19.26% at 2.44 GHz.*

Keywords— *Dielectric resonator antenna, micro-strip feed, partial ground, wideband antenna.*

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Paper ID: 13

Millimeter-wave Overmoded Circular Waveguide Tapers

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Abstract— *The design methodology of the overmoded circular waveguide tapers to connect the gyrotron (ø85mm) output power at 42±0.2GHz/200kW/3secs with different diameters (ø63.5mm and ø31.75mm) of transmission line components has been carried out. Design parameter of taper is optimized using coupling theory in such a manner that it provides an appropriate match between the input and output of transition with lower spurious modes conversion. There are linear and non-linear applicable methods for designing internal taper profile. These methods are implemented and the results of linear tapers are compared with the analogous expressions for raised-cosine (non-linear) tapers. The overall loss in circular linear tapers is less than 1% for the length of approximately 107λ. However, raised-cosine tapers may provide lower insertion loss, but linear tapers with moderate values of diameter ratio may be attractive because of its simplicity in fabrication. Both the tapers are designed and simulated using CST (Computer Simulation Technology) microwave studio software.*

Keywords— *Gyrotron, circular waveguide, taper, insertion loss, mode conversion.*

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Paper ID: 110

Biodegradable Yagi-Uda array antenna

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Abstract— *This paper discusses the design of Yagi-Uda array antenna using paper substrate. The paper is environment friendly, flexible and low cost material, so it is one of the best choices as substrate. The antenna operates on 2.2GHz to 3.2GHz. The simulated gain is 6.05dB. The prototype antenna is fabricated and tested. The measured results slightly vary from simulated results which may be because of fabrication errors.*

Keywords— *Yagi-Uda array, paper substrate, high frequency structure simulator*

2018 3rd International Conference for Convergence in Technology (I2CT 2018)

Pune, India
6-8 April 2018

Pages 1-829

IEEE

IEEE Catalog Number: CFP1883X-POD
ISBN: 978-1-5386-4274-0

IEEE Catalog Number:	CFP1883X-POD
ISBN (Print-On-Demand):	978-1-5386-4274-0
ISBN (Online):	978-1-5386-4273-3

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2018 3rd International Conference for Convergence in Technology (I2CT)
The Gateway Hotel, XION Complex, Wakad Road, Pune, India. Apr 06-08, 2018

Intruder Insinuation and Identification for Vehicle Security

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Abstract— **This paper proposes the alternative approach for vehicle security by providing theft intimation and identification. The proposed system provides three features including indication about the intruder, controlling the vehicle and also provide the facility of recognition of known User or sending captured image Unknown person (Intruder) using SMS and MMS. The proposed system informed the owner about the unauthorized entry by sending SMS. The Proprietor can stop the start of vehicle by sending SMS. Further, the intruder's facial image is captured by the camera attached to the system and forwarded to the proprietor's mobile using MMS. Overall system is design and implemented using GPS and Raspberry PI controller. The results are verified and tested to validate the system's functionality.**

Keywords: Vehicle Security, GSM and Raspberry PI, Face detection, Face Recognition-Identification.

I. INTRODUCTION

Vehicle security is an important issues in our nation. For few of the circumstances like robbery needs better security framework of the owner vehicle. This demands robust and secured framework which conveys the message to the proprietors' smart device without putting human efforts. This has a tendency to use the accessibility of GSM system, cell phone and hardware circuit to accomplish a robotized framework which is customized to act as a reasoning gadget to finish this reason.

TABLE I
REGISTERED CASES FOR VEHICLE THEFT ACROSS STATES BETWEEN YEARS 2011 TO 2013

Year	New Delhi	Uttar Pradesh	Maharashtra	Total in India (Lakhs)
2011	14,668	21,363	19,270	1.51
2012	14,391	22,773	17,885	1.54
2013	14,916	24,948	18,394	1.65

Table 1 presents the instances of vehicle burglary in India as reported in review work of [1]. The purpose of this paper is to use an intelligent remote getaway to instruct the proprietor of the vehicle about any unlawful segment. This is finished by sending SMS to the vehicle's proprietor. An additional preferred standpoint of this Venture is that the proprietor can send back the SMS which will stop the start of the vehicle

The unique feature of the proposed system in comparison with other system is that the proposed system is able to capture the photo using covered camera along with controlling the vehicle remotely. Later system check the identity of the intruder using pre-stored databases. If system founds an unrecognized person then captured photo of the intruder will be transferred to smart device of the owner for further action. The owner is able to receive the MMS to notify about the assessment of vehicle by an intruder. The owner can send message to GSM modem which is interfaced with the microprocessor. The microprocessor controls the vehicle by putting its engine ON/OFF according the received message. Addition feature of LCD is also provided in vehicle to demonstrate engine condition

In this manner, Proprietor of the vehicle from anyplace can stop accessing of his vehicle by unrecognized person. In future, this venture can be additionally stretched out by utilizing a GPS framework, which will give correct area of the vehicle regarding its scope and longitude. Advance this information can be sent to the proprietor by means of SMS and proprietor can enter this Information on Google maps to get the correct position of the vehicle.

II. EXISTING SYSTEM

Though wide literatures are available to provide security to the vehicles, it demand robust approach to control the vehicle and to identify the intruder which help to reduce such cases. The common feature of all available system is to control the vehicle as soon as it starts irrespective of identification. This section provides classification of these algorithms based on implementation and design as follows.

978-1-5386-4273-3/18/$31.00 ©2018 IEEE

2018 Second International Conference on Inventive Communication and Computational Technologies (ICICCT 2018)

Coimbatore, India
20-21 April 2018

Pages 1-661

IEEE Catalog Number: CFP18BAC-POD
ISBN: 978-1-5386-1975-9

Proceedings of the 2nd International Conference on Inventive Communication and Computational Technologies (ICICCT 2018)
IEEE Xplore Compliant - Part Number: CFP18BAC-ART; ISBN:978-1-5386-1974-2

Design of Wideband Broccoli Fractal Antenna for WiMAX/WLAN applications

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Abstract— **Rapid increase in wireless communication systems has boom the demand for antennas. Antenna with increased gain, increased bandwidth, small size and low profile are mostly preferred in recent communication links. One such method to perform is fractal simulation of Microstrip Patch Antenna. This paper presents a design and simulation of fractal in simple circular patch antenna up to three iterations. With the aim of increasing gain, minor modifications are performed in the design after final iteration. Following design is made using HFSS software with the substrate material as FR4 having 4.4 dielectric constant and 1.6mm height. Possessed antenna gives a wideband up to 18% between 5.32-6.35 GHz frequencies for WiMAX/WLAN applications.**

Index Terms— ***Microstrip Patch Antenna, High Frequency Structure Simulator, Frame Retardant, World Interoperability for Microwave Access.***

I. INTRODUCTION

Modern wireless communication systems are acclaiming more to the design of antennas for father development in communication technology, as antenna being the key element for the whole wireless communication system. Primarily antenna serves as the transducer between the energy supplied by the transmission line and the energy radiated in the free space. Radiation of electromagnetic waves are efficiently performed by an antenna [1-4]. It act as matching systems between electromagnetic energy source and empty space. The only goal in using antennas, is to optimize this matching. Once the matching is done, the antenna radiates efficiently by producing high gain. Accept Gain, there are many other properties which take part in antenna designing. Some properties of Antennas are listed as follows: "Antenna Pattern"- which shows the field intensity for different directions, "Radiation Efficiency"- Ratio of the power radiated to total power, "Impedance Matching"- Input impedance of antenna for maximum power transfer. The above properties are nearly constant over the bandwidth of the antenna or range of frequencies [5-8].

Compactness, lightweight, low profile conformal antennas are today's greatest requirements that can directly be combined into variety of microwave circuits. These are an important aid in the development of printed antennas. Easy Fabrication with low cost on Printed Circuit Board (PCB) makes them frequently useable, that that of the traditional ones. Any geometry shape and size can be considered while designing microstrip antenna. A microstrip antenna consists of a radiating patch on one face of a dielectric substrate with very minor thickness and has an infinite ground plane on the other face. Patch can be of any shape such as the square, circular, triangular, semi-circular, sectorial, and annular ring shapes. Patch antennas radiates primarily because of the fringing fields generated between the ground plane and the patch edge. Since a low dielectric constant with thick substrate provides large bandwidth, better radiation and better efficiency, are mainly preferred. Thus, such a configuration leads to a large antenna size [9]. To overcome this problem, substrate with high dielectric constant should be used which results in less efficiency and narrow bandwidth. Thus, a trade-off must be implemented between the antenna dimensions and antenna performance [10]. The patch is generally made with conductive material such as gold, copper or silver and the patch can be made of any possible shape. Photo-etching method is generally used for getting the patch area on the substrate and removing the access conductive material [11].

The very basic requirement for an effective antenna is small size with enhanced bandwidth. Multiple techniques can be used to reduce the size of antenna, such as [12]:

- using with high permittivity dielectric substrate,
- applying resistive or reactive loading,
- Optimizing shape leads to increase in electric length,
- Notches on certain part of patch or Fractals.

II. FRACTAL

The fractal antenna has the potential to bring in the following requirements. The key point of fractal antenna lies in its repeating geometric structure over two or more scale sizes with aim to increase the perimeter of the material that can receive or transmit more electromagnetic radiation within the specified surface area or volume. Besides this, the cost of fabrication of fractal antennas is very low. Fractal geometry provides the solution by designing compact and multiband antennas in a most efficient and sophisticated way with better antenna performance [13-16]. Fractals can be used in two ways to enhance the antenna designs. The first form is in the design of miniaturized antenna elements by creating notches within the patch area or ground. The second form is to use self-similarity in the geometry.

2018 8th IEEE India International Conference on Power Electronics (IICPE 2018)

Jaipur, India
13-15 December 2018

Pages 1-637

IEEE Catalog Number: CFP1894B-POD
ISBN: 978-1-5386-4997-8

IEEE Catalog Number:	CFP1894B-POD
ISBN (Print-On-Demand):	978-1-5386-4997-8
ISBN (Online):	978-1-5386-4996-1
ISSN:	2160-3162

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Primary Review on MPPT Method and Size of Grid Connected Solar Photovoltaic Inverter

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***Abstract*— In case of grid connected solar photovoltaic inverter, the MPPT technique and size of inverter should be selected carefully. The study in this paper is aimed to address these two major issues subjected with grid connected solar photovoltaic system viz. (i) accurate tracking of maximum power point and (ii) power loss due to use of centralized inverter. Although these both issues are independent of each other, they will result in power loss and reduced output power. The conventional MPPT method suffers from three major problems of continues oscillations around MPP, divergence away from MPP by losing the tracking direction and partial shading. Lot of modified version of MPPT methods are presented by researchers around the globe to address the problem and possible solutions, few of them are discussed in this paper. Still, the advanced MPPT methods are yet to be commercialized. In addition to that, a centralized inverter for large solar photovoltaic power plant has few dis advantages like module mis-match loss, shading losses etc. A module integrated inverter can be the best option to reduce this power loss problem. A comparative analysis of power generation by centralized inverter and module integrated inverter is done for 3.0kWp solar photovoltaic system in PVSyst software.**

Keywords—MPPT, Solar Photovoltaic, Micro-Inverter, Module Integrated Converter

I. INTRODUCTION

INDIA is gifted with abundant amount of solar energy availability. The future energy needs can be met by solar photovoltaic (PV) energy because it possess lot of advantages. Looking forward to this, government has initiated solar park scheme and has approved around 38 solar power plants of total 21.2GW capacity [1]. The power generation by solar PV depends on numerous parameters out of which, one is operation of system at maximum power point. While operating at maximum power point (MPP) on I-V curve, PV module delivers maximum power to the load. The I-V curve of PV module is variable throughout the day and variable load will also have variable load line on its I-V characteristic. If the load line is shifted at right to MPP, the slope decreases and less power is delivered. If the load line is shifted at left to MPP, the slope increases and less power is delivered. Even with change in a load, it should be ensured that operating point is at or at least near to MPP. To mitigate the problem of this challenge, lot of maximum power point tracking (MPPT) methods have been investigated and proved by researchers around the globe [2-3]. These methods have been proved for their accuracy, response time, efficiency, ability to cope up with shading & fast changing radiation etc. Out of all these methods, reference cell method, Perturb & Observation (P&O) and incremental conductance (InC) are used as conventional MPPT methods because of their simplicity and lesser cost. This paper is focused on problems with this conventional MPPT methods and also efforts made to overcome the power loss problems by modifying the MPPT technique.

In grid connected solar PV systems, an inverter is used for conversion from DC to AC power and also it takes care of synchronization with grid power. However, it should be noted that the size of PV module or array is selected such that the voltage given by PV should be within operating range of inverter. The power from DC to AC can be done by single stage or multi stage configurations by power electronic circuit. In single stage conversion, DC power from PV is directly converted into AC power compatible with grid. This type of configuration gives higher efficiency due to one conversion stage. In a multi stage configuration, power conversion has two steps. In first stage, the DC power from PV is converted into maximum available DC power by DC-DC converter and then this DC power is converted into AC for grid integration. In both type of connection, there are sub topologies of grid connected inverter i.e centralized inverter, string inverter and module integrated inverter. In centralized inverter, generally inverter rating is higher and is connected to large number of PV modules connected in series parallel manner. In string inverter, the medium rating inverter is connected to few numbers of PV modules connected in series. In module integrated inverter, each PV module has its own inverter for power conversion. Finally a performance monitoring system is also included now days in almost all grid connected PV systems. Inverter system itself includes the monitoring of system voltage, input and output of inverter, energy generated in kWh and fault condition if any. A data logger system is installed in a computer and instantaneous value of power and energy can be monitored online. The inverter topologies are also discussed briefly in this paper with their pros and cons.

II. CONVENTIONAL MPPT METHODS FOR SOLAR PHOTOVOLTAIC SYSTEM

In general, MPPT works to match the load impedance with source impedance for maximum power transfer. A DC-DC converter or DC-AC converter is used for impedance matching. In case of grid connected PV system, instantaneous values of grid voltage and grid current are recorded to provide it later on to the MPPT algorithm. However a power electronic converter should be carefully designed to cover the entire range of operating points on I-V

978-1-5386-4996-1/18/$31.00 ©2018 IEEE

Advances in Intelligent Systems and Computing 698

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Applications of Artificial Intelligence Techniques in Engineering

SIGMA 2018, Volume 1

Springer

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ISSN 2194-5357 ISSN 2194-5365 (electronic)
Advances in Intelligent Systems and Computing
ISBN 978-981-13-1818-4 ISBN 978-981-13-1819-1 (eBook)
https://doi.org/10.1007/978-981-13-1819-1

Library of Congress Control Number: 2018949630

This Springer imprint is published by the registered company Springer Nature Singapore Pte Ltd.
The registered company address is: 152 Beach Road, #21-01/04 Gateway East, Singapore 189721, Singapore

Optimal Active–Reactive Power Dispatch Considering Stochastic Behavior of Wind, Solar and Small-Hydro Generation

Jigar Sarda and Kartik Pandya

Abstract Generations from several sources in an electrical network are to be optimally scheduled for economical and efficient operation of the network. Optimal Power Flow (OPF) basically performs an intelligent power flow and optimizes the system operation condition by optimal determination of control variables. The objective of this paper is minimize the total fuel cost of the traditional generators plus the expected cost of an uncertainty cost function for renewable generators while satisfying all operational constraints. The model considers reserve cost for overestimation and penalty cost for underestimation of intermittent renewable sources. In this paper Weibull, Lognormal and Gumbel distributions are used for the wind speed, solar irradiance and river flow respectively. For achieving optimal solution efficiently, it requires a robust and effective solution technique. In this paper, results of the Cuckoo search algorithm (CSA) and Flower pollination algorithm (FPA) are compared to dealing with such type of optimal active–reactive power dispatch problems on IEEE-57 bus system.

Keywords AC optimal power flow · Renewable energy sources
Weibull probability distribution function · Lognormal probability distribution function · Gumbel probability distribution function

1 Introduction

The electric power industry has lived a significant expansion and growth over the course of the past two decades. The penetration level of renewable sources are increased due to their pollution-free generation techniques and continuous availability. In some days, however a single renewable energy source system cannot

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H. Malik et al. (eds.), *Applications of Artificial Intelligence Techniques in Engineering*, Advances in Intelligent Systems and Computing 698,
https://doi.org/10.1007/978-981-13-1819-1_25

2018 IEEE Innovative Smart Grid Technologies – Asia (ISGT Asia 2018)

Singapore
22-25 May 2018

Pages 1-639

IEEE Catalog Number: CFP18ISK-POD
ISBN: 978-1-5386-4292-4

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP18ISK-POD
ISBN (Print-On-Demand):	978-1-5386-4292-4
ISBN (Online):	978-1-5386-4291-7
ISSN:	2378-8534

Additional Copies of This Publication Are Available From:

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CHAOS enhanced Flower Pollination Algorithm for Optimal Scheduling of Distributed Energy Resources in Smart Grid

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***Abstract*—This research paper has proposed a novel meta-heuristic optimization algorithm entitled CHAOS-Flower Pollination Algorithm (CHAOS-FPA) for optimally scheduling distributed energy sources in a smart grid. The basic FPA was modified by Gauss map chaotic equations. They are used to enhance the initialized population of particles, modify step size of Levy flight and reset the position of particles beyond the constraint surface. The objective was to maximize the profit of an aggregator. The proposed method has been tested on 33-bus distribution system consisting of sixty-six distributed sources, ten external energy suppliers, 1 large wind unit, 15 storage units, 1800 gridable electric vehicles and 32 demand response loads. It has been compared with the basic FPA, Cuckoo Search Algorithm (CSA) and Differential Search Algorithm (DSA). The simulation results showed that it gave better results than other methods.**

***Index Terms*—Chaos equations, Distribution network, Flower pollination algorithm, Smart grid.**

I. INTRODUCTION

For the last two decades, the conventional electrical power systems have been converted into restructured power systems and smart grids. The smart grid is an electrical power system which extensively uses Information and Communication Technologies (ICT) for enabling more efficient and reliable power system operation with a reduction in CO_2 emission with improved social welfare [1]. Various classical and meta-heuristic methods have been used so far to address optimization problems of smart grid. In [2], Linear programming is used to minimize the reactive output power of DG to maintain voltage regulation. In [3] Non-linear programming was used to minimize energy losses in the presence of DG. In [4] dynamic OPF minimizes generation curtailment using the interior point method. The Genetic algorithm has been used[5] to minimize the operational costs of a microgrid.

In ref. [6] Evolutionary algorithm for optimal load shifting for Demand side management has been proposed. Reference [7] proposed risk based OPF method considering the uncertain nature of wind. Ref. [8] Proposed reconfiguration of distributed network to tackle higher DG penetration and to heal network congestion. In this paper, CHAOS-FPA has been proposed to maximize the profit of the aggregator. It is compared with basic FPA, CSA and DSA methods. In this paper section II represents a mathematical model of energy resource management, section III represents defects in basic FPA, section IV represents proposed CHAOS-FPA algorithm, section V represents case study, finally section VI represents a discussion of simulation results.

II. MATHEMATICAL MODEL

A. Objective function

The aim of the prosumer is to maximize profits. It could be rewritten in terms of minimization function Z [9] as shown below.

$$\text{Min.}Z = \text{OC} - \text{Income} \quad (1)$$

$$Income = \sum_{t=1}^{T} \left[\left[\sum_{L=1}^{N_L} P_{Load(L,t)} * MP_{Load(L,t)} + \sum_{M=1}^{N_M} P_{Sell(M,t)} * MP_{Sell(M,t)} \right] + \left[\sum_{E=1}^{N_E} P_{Charge(E,t)} * MP_{Charge(E,t)} + \sum_{V=1}^{N_V} P_{Charge(V,t)} * MP_{Charge(V,t)} \right] \right] * \Delta t \quad (2)$$

The prosumer receives income (2) from four sources. I. Revenue from consumer, II. Energy sold in electricity market, III. Revenue from charging of storage units and IV. Revenue from charging of Electric vehicles. The parameters of (2) are as follows: N_L is the number of loads; $P_{Load(L,t)}$ is an active power demand of load L in period t (W); $MP_{Load(L,\ t)}$ is the price of load L in period t (m.u.); N_M is the number of markets; $P_{sell(M,t)}$ active power sell to market, $MP_{Sell(M,t)}$ is the price that market M pays in period t (m.u.); N_E is the no. of energy storage units. $P_{Charge(E,t)}$ is the active power charge of energy storage E in period t; $MP_{Charge(E,t)}$ is the price for the charge

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Three Phase Grid connected Photovoltaic System to Control Active and Reactive Power

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***Abstract*—In this paper PV system is connected to the grid in single stage. PV system has nonlinear characteristic, therefore to utilize of maximum power of PV system, maximum power point technique is used. In this strategy active and reactive power is controlled as per the instantaneous p-q theory. The advantage of this scheme is PV system work day time and night time. During day time active power is send to grid and same time reactive power is compensated by load simultaneously. During night when there is no irradiation at that time inverter compensate reactive power of the load. The other advantage of this system is no requirement of PLL (Phase locked loop).**

Keywords*—PV system, Maximum Power Point Tracking(MPPT),instantaneous reactive power theory,Grid-connected inverter.

I. INTRODUCTION

Photovoltaic (PV) systems are solar energy supply systems, which either supply power directly to an electrical equipment or feed energy into the public electricity grid. Generally, PVs are considered as an expensive method of producing electricity. However, in stand-alone situations, PVs are the most economic solutions to provide the required power service[17].Moreover, with the development of PV technologies, applications of PVs in grid-connected situations have grown rapidly, indicating that PVs are very attractive to produce environmentally benign electricity for diversified purposes [12],[15],[16].PV system has non-linear I-V characteristics and it is essential to find maximum power for utilization of PV system. The output power of PV arrays is always changing with weather conditions,i.e., solar irradiation and atmospheric temperature.Therefore,a maximum power point tracking (MPPT) control to extract maximum power from the PV arrays at real time becomes indispensable in PV generation systems. There are different type of maximum power point techniques are developed. The methods vary in complexity, sensors required, convergence speed, cost, range of effectiveness, implementation hardware, popularity, and in other respects[8],[10] .

II. SYSTEM CONFIGURATION

The block diagram of overall system is shown in fig.1.The system divided mainly in three parts:(1)PV panel ,(2)Inverter,(3)Three phase grid. In this proposed system PV farm is connected with grid in single stage by inverter only.The main function of proposed system is to control active as well as reactive power during day and night time. For understanding overall configuration, the knowledge of modeling of PV system is required and there should be clear idea about its behavior during different atmospheric conditions[16],[21].

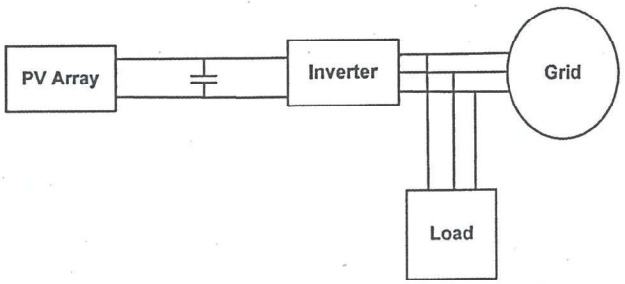

Fig. 1 Block diagram of grid connected PV system

III. MODELING OF PV ARRAY

The basic equation of ideal photovoltaic cell for single diode model is,

$$I = I_{pv,cell} - I_{0,cell}\left[\exp\left(\frac{qv}{akT}\right) - 1\right] \qquad (1)$$

$I_{pv,cell}$ - Current generated by the incident light or photovoltaic current,

I_d -Shockley diode equation

I_0 - Reverse saturation or leakage current of the diode

q - Electron charge=1.60217646 X 10^{-19} C

a - diode ideality constant

A Deep Learning Approach for Face Detection using YOLO

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***Abstract*—Deep learning is nowadays a buzzword and is considered a new era of machine learning which trains the computers in finding the pattern from a massive amount of data. It mainly describes the learning at multiple levels of representation which helps to make sense on the data consisting of text, sound and images. Many organizations are using a type of deep learning known as a convolutional neural network to deal with the objects in a video sequence. Deep Convolution Neural Networks (CNNs) have proved to be impressive in terms of performance for detecting the objects, classification of images and semantic segmentation. Object detection is defined as a combination of classification and localization. Face detection is one of the most challenging problems of pattern recognition. Various face related applications like face verification, facial recognition, clustering of face etc. are a part of face detection. Effective training needs to be carried out for detection and recognition. The accuracy in face detection using the traditional approach did not yield a good result. This paper focuses on improving the accuracy of detecting the face using the model of deep learning. YOLO (You only look once), a popular deep learning library is used to implement the proposed work. The paper compares the accuracy of detecting the face in an efficient manner with respect to the traditional approach. The proposed model uses the convolutional neural network as an approach of deep learning for detecting faces from videos. The FDDB dataset is used for training and testing of our model. A model is fine-tuned on various performance parameters and the best suitable values are taken into consideration. It is also compared the execution of training time and the performance of the model on two different GPUs.**

Keywords—Face Detection, YOLO, Neural Network, object detection, Convolutional Neural Network

I. INTRODUCTION

In early times, research was carried out on the various hand-crafted features extraction methods which were used in training the traditional machine learning algorithms for detection and recognition. It leads to an increase in the computation power and time for extracting features and gives less accurate results. To overcome the computation time, power and accuracy, the same was implemented using the models of neural networks and thereafter deep neural networks.

There are various deep learning [1] models like convolutional neural network, recurrent neural network etc. but among all, deep convolutional neural networks (CNNs) [2] are the best model for finding patterns from images. CNN also has the capability to classify, detect and label the object with high accuracy. Region-based CNN (R-CNN) [3], Fast R-CNN [4], Faster R-CNN [5], and YOLO [6] are popular object detection networks in recent years.

Face detection has a plethora of applications. It plays a crucial role in face recognition algorithms. Face recognition has several applications such as person identification in surveillance and authentication for a security system. It is also help for emotion recognition and based on detected emotion, further analysis can be used for emotion based applications. Hence, it is considered to be a way to deliver rich information like age, emotion, gender and many more about an individual. Other applications of face detection are to automatically focus on human faces in camera, to give tag and to identify different parts of faces. Automated face detection has gained attention in computer vision and pattern recognition. Earlier face detection systems could handle only simple cases but now it has outperformed in various situations using deep learning algorithms. Due to large variation caused by occlusions, illumination and viewpoints, face detection remains a challenging problem in the area of computer vision. So accuracy, training time and processing time in real-time videos for detecting faces are still research issues.

In this paper, section two presents related work of face detection algorithms. Section three describes the working of YOLO framework for detecting objects. Proposed work is explained in section four. Experimental setup and dataset information are discussed in section five. Results are analyzed in section six. Finally, conclusion and future work are described in section seven.

II. RELATED WORK

Face detection is one of the challenging problems in the field of pattern recognition. Early in 1994 Vaillant et al. [7] had applied the algorithm named neural networks for detecting the faces. They had proposed a model which could detect the absence or presence of the face in an image by training a neural network. In this method, the entire image was scanned with the network at all possible locations. In the year 1998, [8] rotation invariant face detection method was used wherein a "router" network estimated the orientation of the face and proper detector network was applied. For detecting the semi-frontal face from a complex image, a neural network was developed by Gracia in the year 2002 [9]. Convolutional neural network for pose

A Roadmap to Deep Learning: A State-of-the-Art Step Towards Machine Learning

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Abstract. Deep learning is a new era of machine learning and belonging to the area of artificial intelligence. It has tried to mimic the working of the way the human brain does. The models of deep learning have the capability to deal with high dimensional data and perform the complicated tasks in an accurate manner with the use of graphical processing unit (GPU). Significant performance is observed to analyze images, videos, text and speech. This paper deals with the detailed comparison of various deep learning models and the area in which these various deep learning models can be applied. We also present the comparison of various deep networks of classification. The paper also describes deep learning libraries along with the platform and interface in which they can be used. The accuracy is evaluated with respect to various machine learning and deep learning models on the MNIST dataset. The evaluation shows classification on deep learning model is far better than a machine learning model.

Keywords: Deep learning · Deep learning models · Deep learning libraries MNIST dataset

1 Introduction

Deep Learning handles too much complicated information and simplifies the entire tasks. Geoff Hinton, Yann Lecun, Andrew Ng, Andrej Karpathy and Yoshua Bengio are the most popular researchers of Deep learning [1]. Google and its self-driving cars, Apple, NVIDIA and its GPU, Toyota are the various companies dealing with deep learning. The main motive of deep learning is to make the machine intelligent in the way the human brain works. The various deep architectures and learning models help in learning the features of numerous images and other objects. Neural networks are used to make the smart computers that can understand the complex patterns. The complex patterns are broken down in simpler patterns with the help of the deep

A. K. Luhach et al. (Eds.): ICAICR 2018, CCIS 955, pp. 160–170, 2019.
https://doi.org/10.1007/978-981-13-3140-4_15

Bioinformatics: An Application in Information Science

Parth Goel and Mamta Padole

Abstract Bioinformatics is an interdisciplinary subject of bonded relationship in between computer science, mathematics, and molecular biology. Biological information keeps growing tremendously. Molecular biologists are specialized in solving bioinformatics issues such as to store, analyze, and retrieve biological data by applying algorithm and techniques of computer science. This review is from the computer science perspective. The fundamental terminology of bioinformatics and its definition are essential to understand bioinformatics in depth. There are main three components of bioinformatics and data types. Data types are input format for tools or software. Real-life databases of bioinformatics are also discussed which are important for analyzing the algorithms. We then provide bioinformatics applications in various areas. As bioinformatics is a fusion from many disciplines, there are lots of research issues and challenges, but computational and biological research issues and challenges are quite significant. Nowadays, the tremendous amount of biological data are being generated, Due to them, bioinformatics has emerging future research trends in big data, machine learning, and deep learning which are presented at last.

Keywords Bioinformatics · Applications · Future trends in bioinformatics
Biological database · Research issues and challenges

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R. S. Bapi et al. (eds.), *First International Conference on Artificial Intelligence and Cognitive Computing* , Advances in Intelligent Systems and Computing 815,
https://doi.org/10.1007/978-981-13-1580-0_22

Simon Fong · Shyam Akashe
Parikshit N. Mahalle
Editors

Information and Communication Technology for Competitive Strategies

Proceedings of Third International Conference on ICTCS 2017

Springer

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Shyam Akashe
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ISSN 2367-3370 ISSN 2367-3389 (electronic)
Lecture Notes in Networks and Systems
ISBN 978-981-13-0585-6 ISBN 978-981-13-0586-3 (eBook)
https://doi.org/10.1007/978-981-13-0586-3

Library of Congress Control Number: 2018941974

This Springer imprint is published by the registered company Springer Nature Singapore Pte Ltd.
The registered company address is: 152 Beach Road, #21-01/04 Gateway East, Singapore 189721, Singapore

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CHAPTER 17

AUTOMATION OF APPLIANCES USING ELECTROENCEPHALOGRAPHY

Shivam Kolhe[1], Dhaval Khemani[1], Chintan Bhatt[1], and Nilesh Dubey[1]

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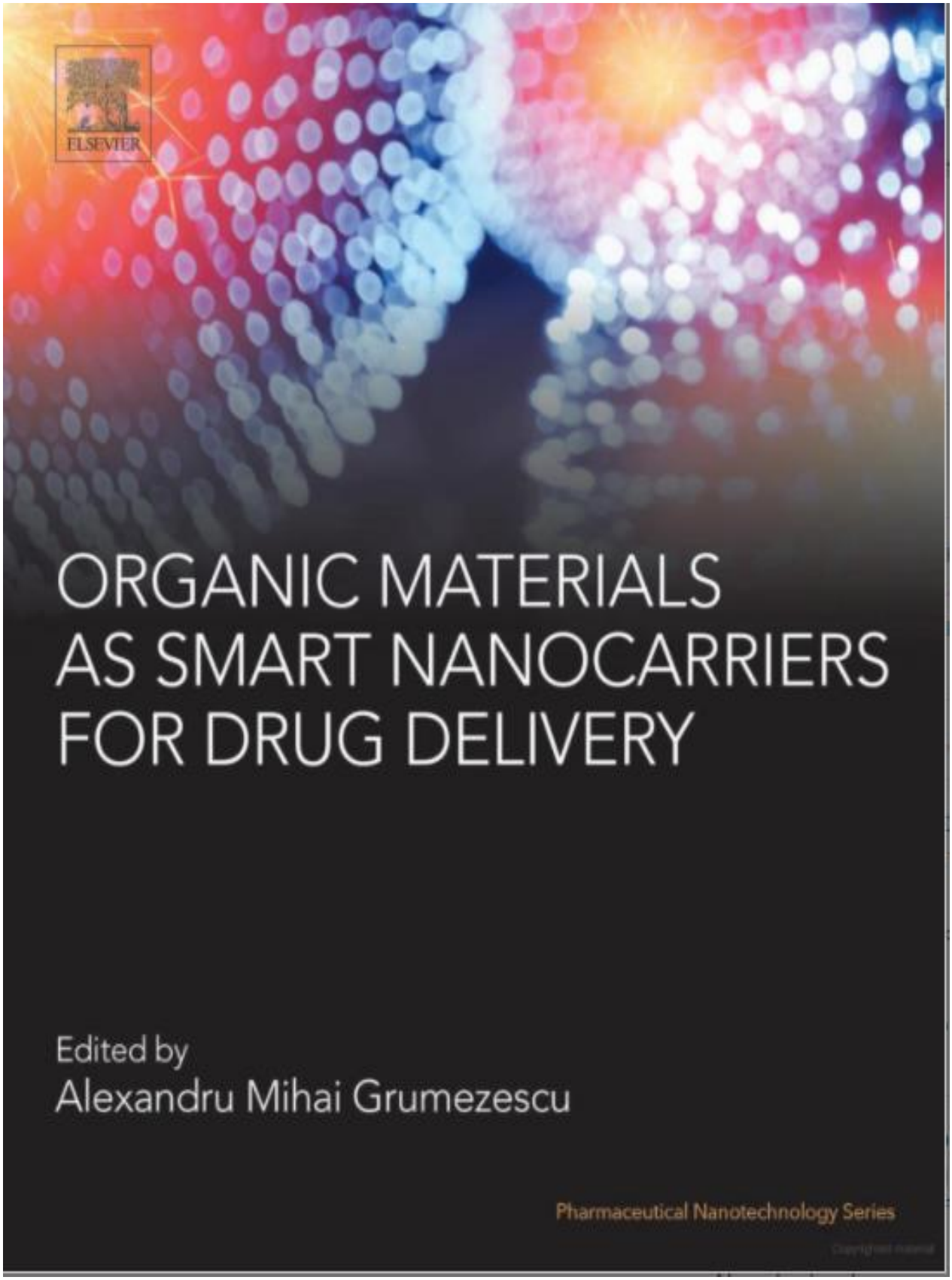
Abstract

Brain Computer Interface (BCI) is one of the new emerging field in which a direct communication pathway is established between a human or animal brain and any outside or external device. The two way BCI's allow the brain and the external devices to exchange signals in both the directions. But until today we have been successful in establishing one way BCI's. In future, we will be able to use two way BCI's effortlessly. The best is yet to come. In this chapter, an introduction to the BCI technology is given, the different signals generated by the brain are stated, also brain anatomy is explained. In addition, how are brain signals generated by the brain, how does BCI system work, a method to perform Electroencephalogram, how are those brain signals detected is explained and also BCI classes are stated and introduced.

Keywords: Internet of Things (IoT), Brain Computer Interface (BCI), Electroencephalography / Electroencephalogram (EEG)

Dac-Nhuong Le et al. (eds.), Emerging Technologies for Health and Medicine, (225–284)

Faculty of Pharmacy


ELSEVIER
ORGANIC MATERIALS
AS SMART NANOCARRIERS
FOR DRUG DELIVERY
Edited by
Alexandru Mihai Grumezescu
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CHAPTER

Polymeric nanofibers for controlled drug delivery applications

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Gayatri C. Patel and Bindu K. Yadav
Charotar University of Science and Technology (CHARUSAT), Changa, India

CHAPTER OUTLINE

Organic Materials as Smart Nanocarriers for Drug Delivery. DOI: http://dx.doi.org/10.1016/B978-0-12-813663-8.00004-X

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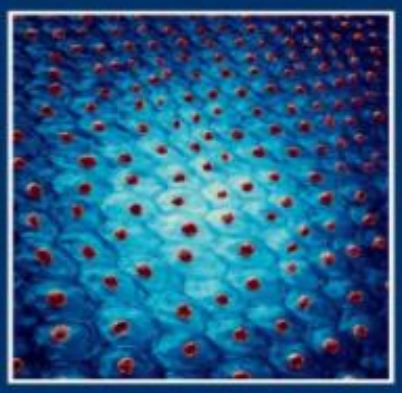

Stimuli Responsive Polymeric Nanocarriers for Drug Delivery Applications

Advanced Nanocarriers for Therapeutics

Volume 2

Edited by Abdel Salam Hamdy Makhlouf
and Nedal Y. Abu-Thabit

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Contents

Stimuli-responsive polymers for ocular therapy

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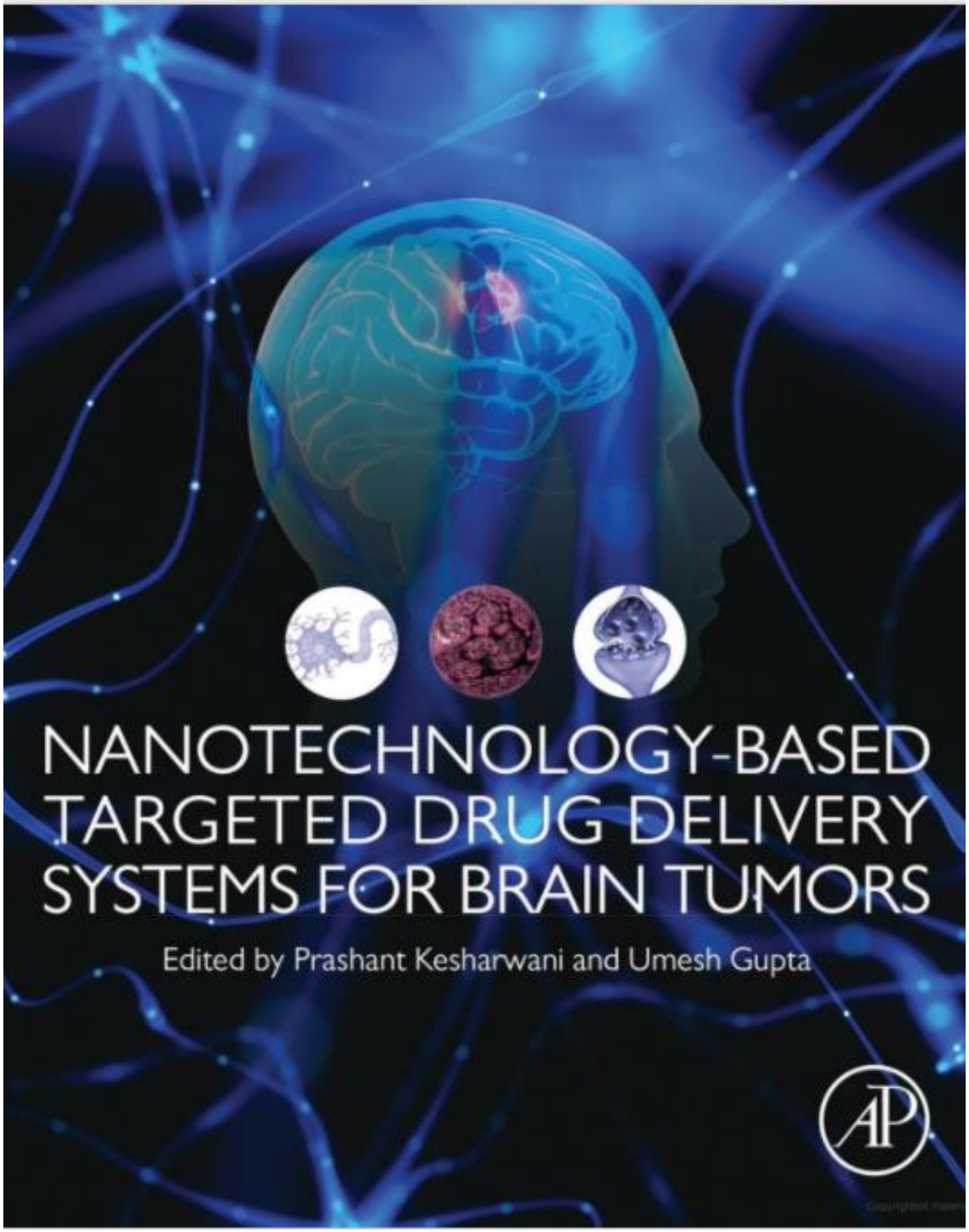
Gayatri C. Patel[*], *Vijaykumar K. Parmar*[†], *Prigneshkumar S. Patel*[‡]
[*]Ramanbhai Patel College of Pharmacy, Charotar University of Science and Technology (CHARUSAT), Anand, India, [†]Department of Pharmaceutical Sciences, Sardar Patel University, Vallabh Vidyanagar, Anand, India, [‡]Sun Pharmaceutical Industries Ltd., Vadodara, India

Abbreviations

ACZ	acetazolamide
DGP	disodium alpha-D-glucose 1-phosphate
FLZ	fluconazole
HPC	hydroxypropyl cellulose
HPMC	hydroxypropylmethylcellulose
IIG	inactive ingredients guide
IOP	intra ocular pressure
IPNs	interpenetrating polymer network
KT	ketorolac tromethamine
LCST	lower critical solution temperature
μL	microliter
MC	methylcellulose
ODD	ocular drug delivery
ODTx	on-demand therapeutics
PAA	poly(acrylic acid)
PAAm	polyacrylamide
PEG-DA	poly(ethylene glycol) diacrylate
PEI	poly(ethylenimine)
PEO	polyethylene oxide
PL	poly(lysine)
PNIPAAm-CS	poly(*N*-isopropylacrylamide)-chitosan
PPO	polypropylene oxide
SIN	sinomenine hydrochloride
SLNs	solid lipid nanoparticles
TM	timolol maleate
UCST	upper critical solution temperature
VAP	vitamin A palmitate

Stimuli Responsive Polymeric Nanocarriers for Drug Delivery Applications. https://doi.org/10.1016/B978-0-08-101995-5.00023-4


NANOTECHNOLOGY-BASED
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SYSTEMS FOR BRAIN TUMORS
Edited by Prashant Kesharwani and Umesh Gupta
AP

Nanotechnology-Based Targeted Drug Delivery Systems for Brain Tumors

2018, Pages 191-244

Chapter 8 - Solid Lipid Nanoparticles for Targeted Brain Drug Delivery

Samir G. Patel [1], Meghal D. Patel [1], Archita J. Patel [2], Mahavir B. Chougule [3], Hira Choudhury [4]

Show more

https://doi.org/10.1016/B978-0-12-812218-1.00008-7

Abstract

The blood–brain barrier is one of the strictest barriers in vivo and its role is to maintain homeostasis of the brain. Treatment of brain diseases is one of the most difficult challenges in oncology due to the various hurdles involving effective transport of drugs to the brain. To overcome the limitations of current treatment targeted nanocarriers are used which are injected through a systemic route for drug delivery. Nanocarriers ranging in size between 10 and 1000 nm are generally known as nanoparticles. Nanoparticles are classified as: solid lipid nanoparticles (SLNs), nanostructure lipid carriers, and lipid drug conjugates. Of these, the SLNs, which consist of spherical solid lipid particles in the nanometer range, are most easily dispersed in water or aqueous surfactant solution and have the potential to carry lipophilic or hydrophilic drug(s) or diagnostics to the brain. Nanoparticles have excellent physical stability, protect incorporated labile drugs from degradation, control drug release (fast or sustained) depending on the incorporation model, good tolerability, and site-specific targeting. They can also improve the ability of the drug to penetrate through the blood–brain-barrier. Hence, it is the most promising drug targeting system for the treatment of central nervous system disorders.

Previous Next

Keywords

Central nervous system (CNS); brain tumor; blood–brain barrier (BBB); nanocarriers; solid lipid nanoparticles (SLNs)

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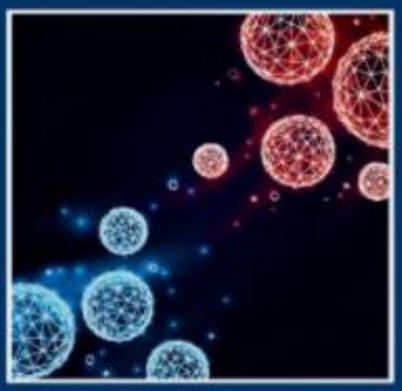

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Stimuli Responsive Polymeric Nanocarriers for Drug Delivery Applications, Volume 1

Types and Triggers

Woodhead Publishing Series in Biomaterials

2018, Pages 555-580

20 - Responsive cyclodextrins as polymeric carriers for drug delivery applications

Vijaykumar Parmar *, Gayatri Patel †, Nedal Y. Abu-Thabit ‡

https://doi.org/10.1016/B978-0-08-101997-9.00024-2

Abstract

Cyclodextrins are well accepted as pharmaceutical excipients due to their capability of improving the solubility and bioavailability of poorly soluble drugs. Cyclodextrins gained an important role in the pharmaceutical industry because of their amphiphilic nature and excellent biocompatibility. The structural and pharmaceutical properties of native cyclodextrins have been summarized in this chapter. The efficiency and applicability of cyclodextrins can be further improved if they are incorporated into polymeric carrier systems. Stimuli-responsive biopolymers have attracted much research attention for their wide applications in the field of novel drug delivery systems. Stimuli responsive, also termed as "environmental sensitive," "intelligent," or "smart," these carriers are capable of returning to their initial state as soon as the trigger is removed. Cyclodextrins may be functionalized by glycol conjugation, cross-linking, and polymerization for stimuli-responsive properties. Among all the polymeric nanocarriers studied, supramolecular cyclodextrins and their derivatives as nanocarriers for drug delivery applications have shown high potential as smart biomaterials in delivering active agents. This chapter focuses on cyclodextrins and their derivatives as stimuli-responsive polymeric nanocarriers for drug delivery and biomedical applications. The responsive cyclodextrins are able to control drug release in response to either exogenous stimuli such as temperature, light intensity, and magnetic field or endogenous stimuli like pH, enzyme concentration, and oxidation-reduction potential. Dual-stimuli-responsive properties of cyclodextrins are reported by researchers in the field

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CHAPTER- 20

A Study and Forecast of Dhaanya Agricultural Commodity Index

Rajesh Sadhwani
Assistant Professor, Indukaka Ipcowala Institute of Management, CHARUSAT

Abstract

The purpose of this research paper is to understand the Dhaanya index, the paper also attempts to forecast the index level, the level of index reflects the change in agricultural commodity prices. The index is maintained and computed by National Commodities and Derivative Exchange limited. To study the same daily closing prices of Dhaanya for last twelve years has been considered. The data are taken from NCDEX website. Analysis shows that agricultural commodities prices have increased substantially since 2008. To forecast the Dhaanya value ARIMA model has been used. It indicates the range bound or constant increase in commodity prices in near future considering 95% of confidence interval.

Keywords: Agricultural commodities, NCDEX, Dhaanya, ARIMA etc.

INTRODUCTION

National Commodity and Derivatives Exchange limited is an online national level commodity exchange established on April 23, 2003 and started operations on December 15, 2003. It offers futures trading in 30 commodities in agriculture, energy, metals, plastics and carbon credits. Apart from all these commodities study if focused on Agricultural commodities. The Dhaanya is an index of National Commodity and Derivative Exchange Limited comprises of 10 liquid agriculture commodities selected from diverse sub-sector of Indian agriculture industry, this accounts of nearly three fourth of the total trade on Exchange. The index is computed using real-time data of near month traded futures contracts of all ten commodities. Currently Dhaanya index comprises of following components,

1. Barley
2. Castor seed
3. Chana
4. Coriander
5. Cotton Seed Oil Cake
6. Guar Seed
7. Jeera
8. Rape Seed - Mustard Seed
9. Soy Bean
10. Turmeric

The index has risen substantially for past twelve years of time period of study. The value of index has risen to 3340.97 against 637.53 in January 2008. The major rise can be seen in the year 2012-14. The same can be observed in graph given below.

Figure 1 Dhaanya Historical Price

Faculty of Sciences

2019. 12 (9)

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Advances in Real and Complex Analysis with Applications

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Departamento de Matemática Aplicada II
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de Vigo
Ourense
Spain

ISSN 2297-0215
Trends in Mathematics
ISBN 978-981-10-4336-9
DOI 10.1007/978-981-10-4337-6

ISSN 2297-024X (electronic)

ISBN 978-981-10-4337-6 (eBook)

Library of Congress Control Number: 2017945222

Mathematics Subject Classification (2010): 11A15, 30C45, 42A38, 44A10, 46G20, 46E50

Printed on acid-free paper

This book is published under the trade name Birkhäuser
The registered company is Springer Nature Singapore Pte Ltd.
The registered company address is: 152 Beach Road, #21-01/04 Gateway East, Singapore 189721, Singapore
(www.birkhauser-science.com)

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Certain Image Formulae and Fractional Kinetic Equations Involving Extended Hypergeometric Functions

Krunal B. Kachhia, Praveen Agarwal and Jyotindra C. Prajapati

Abstract In this chapter, our aim is to establish certain new image formulae of generalized hypergeometric functions by using the operators of fractional calculus. Some new image formulae are obtained by applying specific integral transforms on resulting image formulae. We also acquired generalization of fractional kinetic equations involving extended hypergeometric functions.

Keywords Generalized Gauss hypergeometric function · Fractional derivative operators · Integral transforms · Fractional kinetic equation · Mittag–Leffler function

2010 AMS Math. Subject Classification 26A33 · 33B15 · 33C15 · 33C20 · 33C99 · 44A10 · 33E20

1 Introduction

Fractional calculus is one of the generalizations of classical calculus, and it has been used successfully in various fields of science and technology. Many applications of fractional calculus can be found in other diverse fields, etc. (See [15, 17, 19–22, 35]).

Integral transforms and fractional integral formulae involving well-known special functions are interesting in themselves and play significant roles in their diverse

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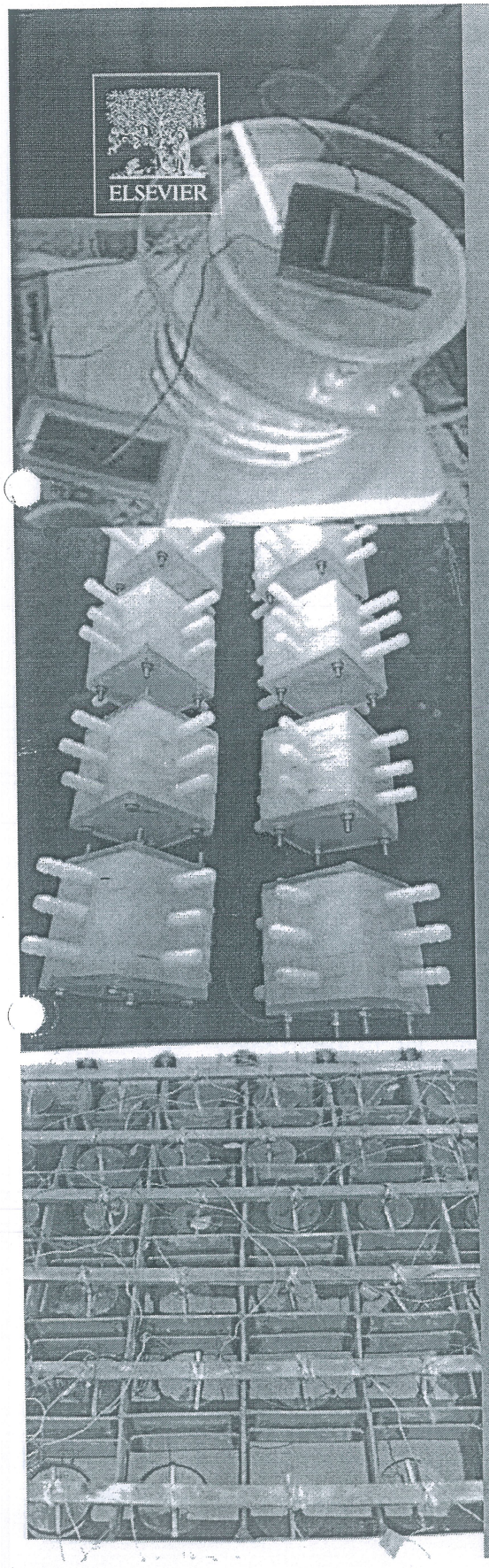
M. Ruzhansky et al. (eds.), *Advances in Real and Complex Analysis with Applications*, Trends in Mathematics, DOI 10.1007/978-981-10-4337-6_1



Biomass, Biofuels, Biochemicals

MICROBIAL ELECTROCHEMICAL TECHNOLOGY

SUSTAINABLE PLATFORM FOR FUELS, CHEMICALS AND REMEDIATION

EDITED BY
S. VENKATA MOHAN
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BIOMASS, BIOFUELS, BIOCHEMICALS

MICROBIAL ELECTROCHEMICAL TECHNOLOGY

SUSTAINABLE PLATFORM FOR FUELS, CHEMICALS AND REMEDIATION

Edited by

S. Venkata Mohan
Sunita Varjani
Ashok Pandey

Elsevier
Radarweg 29, PO Box 211, 1000 AE Amsterdam, Netherlands
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Library of Congress Cataloging-in-Publication Data
A catalog record for this book is available from the Library of Congress

British Library Cataloguing-in-Publication Data
A catalogue record for this book is available from the British Library

ISBN: 978-0-444-64052-9

Publisher: Joe Hayton
Acquisition Editor: Kostas Marinakis
Editorial Project Manager: Hilary Carr
Production Project Manager: Prem Kumar Kaliamoorthi
Cover Designer: Greg Harris

Typeset by TNQ Technologies

CHAPTER

4.4

Treatment of Various Types of Wastewaters Using Microbial Fuel Cell Systems

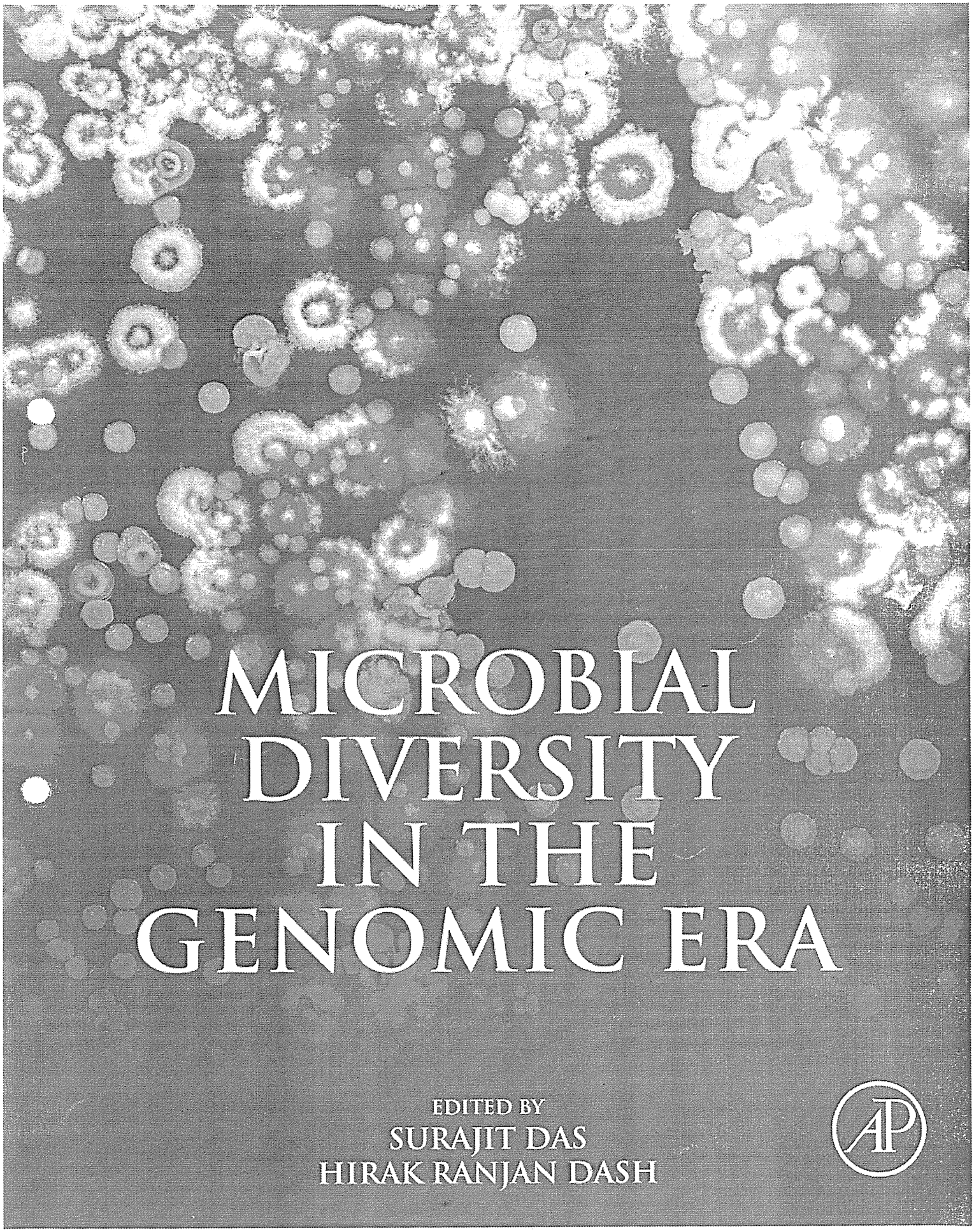
Rohit Rathour[1], *Vidhi Kalola*[1], *Jenny Johnson*[2], *Kunal Jain*[2], *Datta Madamwar*[2], *Chirayu Desai*[1]

[1]P. D. Patel Institute of Applied Sciences, Charotar University of Science and Technology (CHARUSAT), Changa, India; [2]Department of Biosciences, Sardar Patel University, Vallabh Vidyanagar, India

4.4.1 INTRODUCTION

An enormous amount of water is consumed globally for agriculture, industrial, human, and ecosystem needs by our highly industrialized and energy-intensive society. According to the statistics presented by AQUASTAT database [1] in the year 2010, 4001 km^3/year of water was utilized worldwide, out of which 3853 km^3/year fresh water was utilized in different sectors. Of this global water utilization 69% of water was used in the agricultural sector, whereas industrial and domestic sectors utilized 19% and 12% of water, respectively [1]. Such large-scale water utilization ultimately results in generation of huge quantities of wastewaters, posing a challenge for sustainable treatment and reclamation of usable water. Microbial electrochemical technologies (METs) offer a pragmatic solution to harness clean energy with the simultaneous treatment of wastewaters from different pollution sources. Electrochemical systems such as microbial fuel cells (MFCs) are the devices that facilitate the conversion of chemical energy (organic substrates) to electricity via microbially catalyzed redox reactions [2]. Microbes are capable of utilizing a wide range of organic/inorganic compounds due to their versatile metabolic activities; therefore, microbial treatment systems are widely used in wastewater bioremediation [3]. However, not all microorganisms are capable of generating bioelectricity; thus, only electrochemically active organisms are used as biocatalysts in the MFC-based bioremediation systems [4].

Microbial Electrochemical Technology
https://doi.org/10.1016/B978-0-444-64052-9.00027-3



MICROBIAL DIVERSITY IN THE GENOMIC ERA

EDITED BY
SURAJIT DAS
HIRAK RANJAN DASH

Microbial Diversity in the Genomic Era

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ACADEMIC PRESS
An imprint of Elsevier

Academic Press is an imprint of Elsevier
125 London Wall, London EC2Y 5AS, United Kingdom
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50 Hampshire Street, 5th Floor, Cambridge, MA 02139, United States
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British Library Cataloguing-in-Publication Data
A catalogue record for this book is available from the British Library

Library of Congress Cataloging-in-Publication Data
A catalog record for this book is available from the Library of Congress

ISBN: 978-0-12-814849-5

Publisher: John Fedor
Acquisition Editor: Linda Versteeg-buschman
Editorial Project Manager: Megan Ashdown
Production Project Manager: Sreejith Viswanathan
Cover Designer: Miles Hitchens

Typeset by MPS Limited, Chennai, India

Chapter 18

Microbial Community Dynamics of Extremophiles/Extreme Environment

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18.1 INTRODUCTION

It was of common belief, that life on the Earth can only be sustainable under ambient conditions of normal climatic temperatures, 1 atm pressure, neutral pH, salinity between fresh water and sea water, etc. The planet Earth contains plethora of niches, habitats, ecosystems, and environments, that from anthropocentric perspective might not be classified as normal habitable but as "extreme." From the viewpoint of human, standard normal conditions of temperatures, pH, light, nutrient availability, humidity, air quality, pressure, etc. are the paramount conditions required for life (Cavicchioli et al., 2011). But on the contradictory to this perspective, the Earth is clearly full of extremes. For example, environments representing the large portions on the planet are cold environment (>80% of the Earth's geosphere is permanently below 5°C), the cold deep oceans, hot springs are evenly distributed across the continents, etc. (Cavicchioli et al., 2011). Such environments might not be extremes, but they restrict the human colonization.

Soon after the 1960s, upon distinguishing the myth of anthropocentric extremes, strong lines of scientific research have been generated, and it was widely recognized that (microbial) life do exists under various extreme environmental conditions, and collectively they are referred as "extremophiles." They have been found at the depth of 10 km inside the ocean, at a pressure of ~110 MPa, ~6.5 km deep inside the Earth's crust, from extreme acidic (pH 0) niches to basic conditions (pH 12.8), from frozen sea water at −20°C to hydrothermal vents at 122°C (Rampelotto, 2013). Every extreme niche studied across the globe, diverse and plentiful organisms have been found. These observations evidently show that the resident "extremophiles" not only can tolerate the inherent conditions but also require it for their survival.

The major group of extremophiles identified presently is listed in Table 18.1. Extremophiles can be classified according to the required environmental conditions for their growth. For the obligatory requirement of (1) temperature for growth, thermophiles and hyperthermophiles require high temperatures, (2) psychrophiles requires low temperature for optimum growth, (3) acidophiles and alkaliphiles are the organisms that require acidic or basic pH values, respectively, (4) barophiles optimally grow under high pressure, (5) halophiles requires high concentrations of NaCl for their growth. Many of these organisms are normally poly-extremophiles and adapted to survive under various extreme environmental conditions, viz., the ocean depth are generally cold and oligotrophic and exposed to high pressure, several hot springs are acid or alkaline simultaneously and rich in metal content, many hypersaline lakes are highly alkaline (Rampelotto, 2013). Extremophiles may further be categorized into (1) extremotolerant organisms: they can tolerate extreme environmental conditions, though they grow optimally under normal conditions and (2) extremophiles: obviously they required the obligatory extreme conditions for their survival.

In this chapter, an overview of microbial diversity, their adaptation mechanism, and various tools developed for studying the extremophiles are discussed in brief. Microbial community dynamics of few extremophiles such as halophiles, psychrophiles, thermophiles, etc. were discussed in brief (as elaborating the every extreme environment of the

* Shares equal authorship.

Microbial Diversity in the Genomic Era. DOI: https://doi.org/10.1016/B978-0-12-814849-5.00018-6