CONCRETE TECHNOLOGY

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C. G. Mohan Babu
Dr. D. Pavan Kumar
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C for Beginners

Authors

For Beginners to Pro

Dr. Prem Kumar Singuluri, Senior professor, Department of Computer Science and Engineering, Dean Innovations of G. Pullaiah College of Engineering and Technology and Director of Infotech group of Computer Centers. His technical articles were published in national and international journals. He is conferred with Best teacher award in 2017 and Bhishma Acharya award in 2022. He authored various technical and non technical books which are best sellers internationally. He has global audience with bulk subscriptions for his Youtube online videos.

Mr Parashuram Narayanagari Assistant professor, Department of Computer Science and Engineering, GPCET. His research work on AI and Data Science received appreciations from renowned editors. His technical articles were published in various reputed journals.

Ms Gayathri Kunduru, Assistant professor, Department of Computer Science and Engineering, GPREC. Her works on Database Management Systems, Design and analysis of Algorithms were published in reputed journals. Her role in nurturing students and placing them in peeks of their career path received appreciations and awards

C FOR BEGINNERS

For Beginners to Pro

Dr. Prem Kumar Singuluri

Mr. Parashuram Narayanagari

Ms. Gayathri Kunduri

A detailed initiation of e-Government policies are presented for want of information and how these polices helped different administrations to stream line the procedures to strengthen the transactions of different sectors in society in three crucial relationships between government to citizen, business and government.

The important information system with regard to audit procedures for the defined environment under investigation is established and reported.

The e-Governance framework is designed and reported in a novel way by considering the very important and crucial elements like Planning, Social audit, Software audit, Down time, Infrastructure audit, Budgeting, Service audit and Professional audit and the author projected for the first time a "Singuluri framework model" (Authors sur name) analyzing the effectiveness of each of the framework elements and its contributing role in optimizing the e-Governance performance when compared to the manual system with regard to e-Procurement status in Andhra Pradesh.

Dr. Prem Kumar Singuluri, M.Tech, M.Phil., Ph.D, Professor Computer Science and Engineering and Dean, G. Pullaiah College of Engineering and Technology, is a myriad minded and multifaceted technocrat cum mentor. He is the founder of "Infotech Computers" which generated thousands of technocrats to the society, who excelled in India and abroad.

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Information System Audit Framework

Prem Kumar Singuluri

Prem Kumar Singuluri

INFORMATON SYSTEM AUDIT FRAMEWORK FOR e-GOVERNANCE APPLICATIONS

Singuluri Framework to Accelerate e-Governance at G2C, G2B, G2G Interface

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Mrs. Srilakshmi Marri, Associate professor, Head of the Department, Department of Computer Science and Engineering. Her research work on Ad hock networks received appreciations from renowned editors. Her technical articles were published in various reputed journals.

Mrs. Lakshmi Kuppala, Assistant professor, Department of Computer Science and Engineering. Her works on Design and analysis of Algorithms were published in reputed journals. Her motivating and programming skills elevated host of students to peeks in their career path.

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CORE JAVA for Beginners Dr. S. Prem Kumar, Mrs. M. Srilakshmi, Mrs. K. Lakshmi

CORE JAVA

For Beginners

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Renewable Energy with IoT and Biomedical Applications

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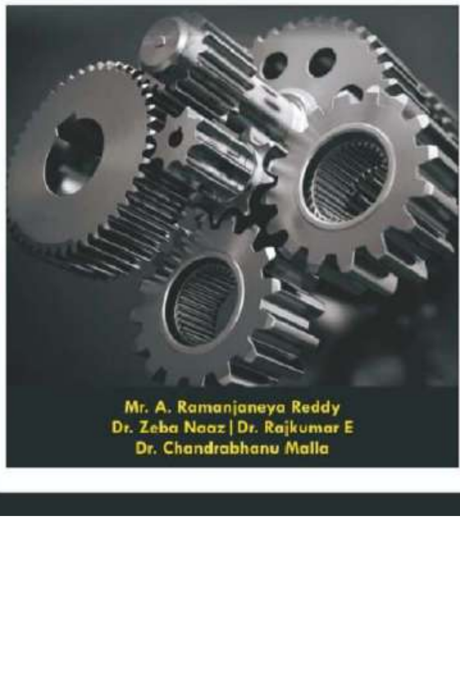

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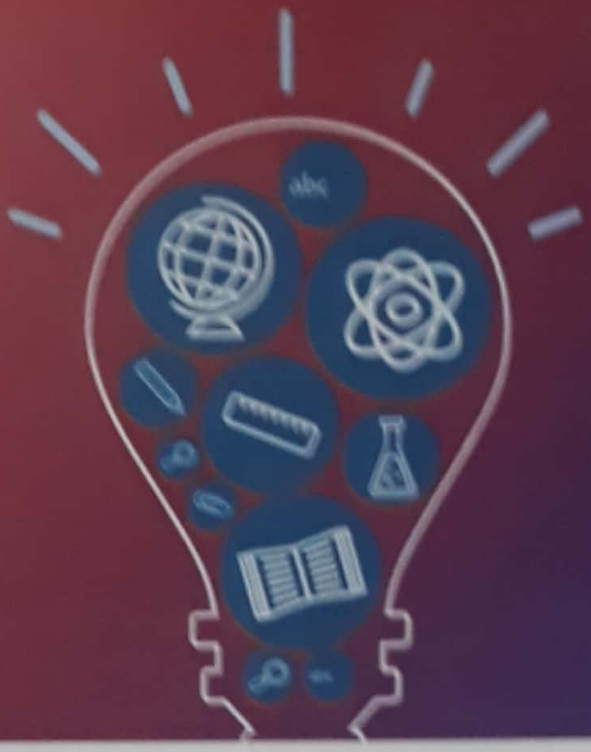

INNOVATIVE TEACHING PRACTICES FOR 4G STUDENTS

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48. Effective Approach to Enhance Teaching & Learning Process

[1]Pasuluri Bindu Swetha, [2]N BalaDastagiri, [3]A Murali, [4]S Fowzia Sultana

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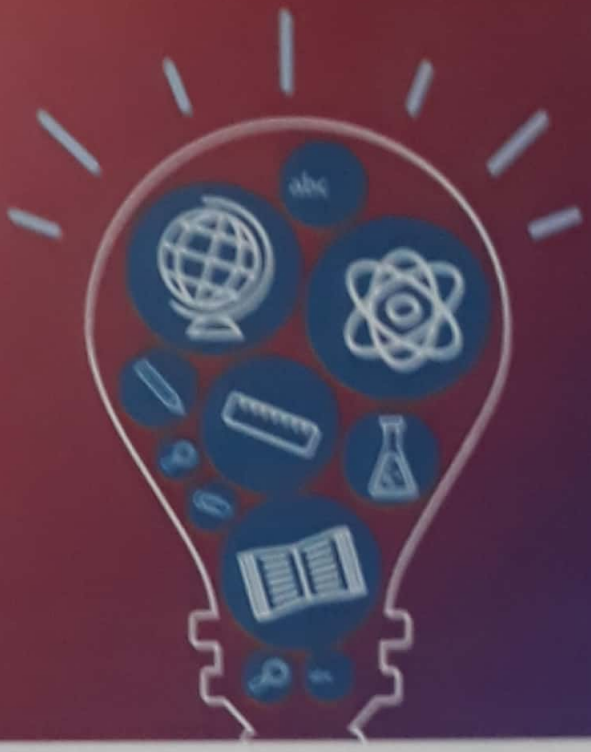
In the process of teaching and learning, the classroom is the prime cultivator of proper learning and it is the green house that develops creativity and talent. The acts between the students and a teacher determine the quality of a classroom. Efficient teachers knows the correct way of designing their classes and take their students onto a journey of real learning, responding to the doubts of students and imparting them into a situation of interactivity and curiosity such that the students can grasp the lessons to their full potential . For this the teachers should learn the classroom management skills. There is a need to optimize the experience of learning.

The below are the few innovative methods that makes the teaching – learning process to be more effective and fun.



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Multimodal Medical Image Fusion Based on Fuzzy Sets with Orthogonal Teaching–Learning-Based Optimization

T. Tirupal, B. Chandra Mohan and S. Srinivas Kumar

Abstract The purpose of an image fusion for medical images is to associate a number of images gained from many bases to a solitary image appropriate for better analysis. The vast majority of the best in class image fusing systems are based on non-fuzzy sets, and the fused image so obtained lags with complementary information. Fuzzy sets are strong-minded to be more appropriate for medical image processing as more hesitations are considered compared with non-fuzzy sets. In this paper, a procedure for efficiently fusing multimodal medical images is presented. In the proposed method, images are initially converted into intuitionistic fuzzy images (IFIs), and another target work called intuitionistic fuzzy entropy (IFE) is utilized for membership and non-membership capacities to accomplish the finest estimation of the bound. Next, the IFIs are compared using the fitness function, entropy. Then, orthogonal teaching–learning-based optimization (OTLBO) is introduced to optimize combination factors that change under teaching phase, and learner phase of OTLBO. Finally, the fused image is achieved using optimal coefficients. Simulations on several pairs of multimodal medical images are performed and matched with the current fusion approaches. The dominance of the proposed technique is presented and justified. Fused image quality is also verified with various quality metrics, such as peak signal-to-noise ratio (PSNR), universal quality index (UQI), structural similarity (SSIM), correlation coefficient (CC), entropy (E), spatial frequency (SF), edge information preservation ($Q^{AB/F}$), and standard deviation (SD).

Keywords Image fusion · Diagnosis · Fuzzy sets · IFI · OTLBO
Spatial frequency

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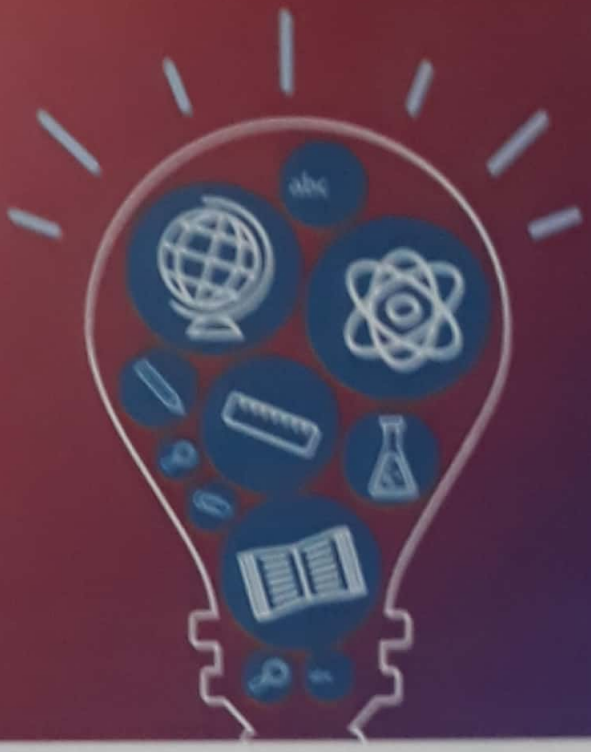

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35. Role of a Teacher: ICT and its effect on Pedagogy of Teaching and Learning

[1]Dr.V.Vijaya Kishore, [2]Mrs.V.Kalpana

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The role of education is to empower students with their skills and attitudes that are essential to their success in our knowledge and society future. The educational practitioners are still developing the strategies and modifying their pedagogy as a result of introducing ICT (Information and Communication Technology) in engineering education. Teachers have to overcome the following factors which form barriers to use of ICT like adequate training, realistic time management, and inclusion in supportive communities or practice. The following are the three factors that must be fulfilled by teachers to be driven in direction of using ICT: Effectiveness - Using technology, teachers must believe that they will achieve higher level goals, Disturbance - Technology will not create any disturbance to teachers in achieving higher level goals, Control- Teachers must believe that they have the ability and resources to use ICT effectively. Further characteristics of teaching and learning contained in the model come from the learners themselves and the context of the teaching and learning process. How ICT fits into this model depends upon whether teachers will see ICT as

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To
A.Charles Stud[1*], N.Ramamurthy[2]

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Subject: Acceptance letter for manuscript (2020/BP/4963D) as a book chapter of Recent Developments in Engineering Research

Dear Dr. N. Ramamurthy,

We are pleased to inform that your manuscript (Ref. no. **2020/BP/4963D**) entitled "**Interpolation of the Histogramed MR Brain Images for Resolution Enhancement**" is ACCEPTED for publication **as a book chapter in the following book: Recent Developments in Engineering Research**

Thank you for submitting your manuscript in **Recent Developments in Engineering Research**

Thanking you.

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Chief Managing Editor
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Innovative Teaching and Learning Process during COVID 19

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Daniel C, School of Civil Engineering, Karunya University, Coimbatore, Tamil Nadu, India.;

Vijayan D.S, Associate Professor, Department of Civil Engineering, Aarupadai Veedu Institute of Technology, VMRF, Chennai, India;

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Synopsis

14
Innovative Teaching & Learning Process Future Education Industry

Srinivas Kishan Anapu [1, *], Bindu Swetha Pasuluri [2], N Bala Dastagiri [3], S. Mani Mohan Trinath [4], A Murali [5]

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COVID-19 Outbreak is making a profuse impact on the Education Industry and Teaching-Learning Processes! It is altering the conventional teaching and learning practices. Across the world, Universities and Institutions are gearing up for this CHANGE. An institution, Every Teacher and Every Student are chasing after Online Classes and Online Content.

The following assumptions are going to be the New Norms in the Education Industry. Survival is Fittest! Now or Never Situation! Make or Break the Ground!

New Norms of Future Education Industry*

I. Online Classes help to control the academic calendar
II. Online Content is to help the student learn better and at his/her…
III. A successful teacher manages both!
IV. A semi-successful teacher manages Online Classes but in long run, loses the fundamental teaching ground
V. A semi-successful teacher manages Online Content but in long run, loses control of the students and administration
VI. Students have already tasted the best of Online Classes and Online Content! First, they demand! If not, They Expect! If we cannot perennially offer, They Search for an alternative and get hooked!
VII. The Smart Teacher gears up for Both Online Classes and Online Content.
VIII. Smart Teacher is Accessible to Student from Anywhere, Any Location! Be it Africa or Be it America or Be it Ambajipet!!
IX. Comparison of Online Content is Quite Inevitable. Today's Great Teacher is no Best Tomorrow!

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Becoming a Change Maker by Reinventing Education During Epedemic, Pandemic and Outbreak-Covid-19

Authored by

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Innovative Teaching and Learning Process during COVID 19

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Synopsis

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Becoming a Change Maker by Reinventing Education During Epedemic, Pandemic and Outbreak-Covid-19

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Famous psychologist Harvard's Todd Rose infers, "The hardest part of learning something new is not embracing new ideas, but letting go of old ones."

The evolving global situation has caused us to rethink our approaches to work, learn and upskill. We need to develop approaches that are pedagogically suited to teaching online, finding the possibilities and limitations of the technology available. The outbreak of Corona virus disease (COVID-19) has impactful dropout on the educational sector but country's premiere institutes are tech savvy in creating professional set-back through standard digital platforms to train students. e-Learning is a key driving force even it is at nascent stage. In these circumstances it is a critical challenge to continue learning experience where the daily activities are scrambled. It is difficult to provide facilities and juggle between wherewithal tasks in this hyperbolic situation. During the pandemic, facilitating and upholding adequate teaching to ensure continuity is hard to imagine but technological skills made it feasible. Along with the skills, graduates should also be aware of dynamic measures in confinement. The rapport among the educator and learner is indispensable to engross and restrain a student. To enforce and affirm such a strategy without physical interaction is a firm hit. In this pandemic, most of the students are inure to constructive simulated methods of gaining knowledge where the teacher alone has the downturn of commendable part to influence and preside the learning curve. There are many ways of connecting the students during this pandemic situation. We have wide variety of Learning Management Systems like Canvas, MOODLE etc. Artificial intelligence can trot out its potential to perform similar duties as a pedagogue at the instance of segregation during widespread of disease (Covid-19). Virtual reality indulges improvement in the way people learn or teach. Social virtual reality space can act as key source for students to team up and build professional skills to disseminate knowledge from any place at any time.

Strategies and Resources

Some important points to be followed on process and technology course conversion are in the form of Readiness quiz that can be taken under the headings:

Automatic Seed Cum Fertilizer Sowing Machine with Water Dripping on Seeds

T. Tirupal and D. Rajasekhar

Abstract Agriculture has reliably been the establishment of India's bolstered improvement. As the quantity of occupants in India continues building up, the interest for things grows too. Subsequently, there is a more noteworthy requirement for multiple cropping in the farms and this requires adequate and efficient machines. The wheel period of the rainstorm is antagonistically influencing the nation's precipitation quantity between long stretches of June to July. The late arrival of the monsoon affects the yielding capability of the crop. In this regard, farmers should be trained to cultivate in the right season using modern technologies with the minimum usage of water. This paper discusses an automatic seed cum fertilizer sowing machine with water dripping on the seeds at the time of sowing. This proposed mechanism will help the farmers to cultivate the land even if the arrival of the monsoon is late.

Keywords Agriculture · Monsoon · Fertilizer

1 Introduction

The wheel period of the storm is antagonistically influencing the nation's precipitation portion between June to July. Poor or no precipitation has furthermore influenced the nation's precipitation share during the long stretch of June. In India, late monsoon is observed in certain parts of the country like; the west parts of Punjab, Haryana, Delhi, Rajasthan, Gujarat, Uttar Pradesh, south parts of Karnataka, Tamil Nadu, Andhra Pradesh, parts of Telangana, Madhya Pradesh, Chhattisgarh and the leeward side of Maharashtra. The late arrival of monsoon affects the yielding capability of the crop. In this regard, farmers should be trained to cultivate in the right season time using modern technologies and with the minimum usage of water. Groundnut, cotton, maize, jowar, bajra, sesamum, and dal are the major rainfed crops in the Rayalaseema region including Anantapur, Chittoor and parts of Kadapa and Kurnool districts, while the dry land legume is cultivated in large areas and in other areas also

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R. Kumar et al. (eds.), *Machines, Mechanism and Robotics*, Lecture Notes in Mechanical Engineering, https://doi.org/10.1007/978-981-16-0550-5_97

The Influence of Ultrasound for the Protection of Animals on Highways Through Electronic Circuits

T. Tirupal and S. Fowzia Sultana

Abstract While driving in regions where creatures are regularly present, it is not unexpected to wind up in a mishap. Both wild and residential creatures might be outside and can keep running into the street. Normally, a driver's first nature is to swerve to abstain from hitting the creature; however, that can have wrecking results, such as losing control of the vehicle and enduring genuine wounds. Swerving can deliver a domino impact, making the driver strike another vehicle or object, which can prompt far more atrocious outcomes, similar to the vehicle moving over or genuine damage to different drivers out on the road. It is essential to avoid such accidents and protect animals as well. To overcome this, new method is proposed in this paper which includes a circuit generating ultrasonic waves. It can be used as pest repellents. For generating ultrasonic waves of high frequency, a generator using 555 timer can be employed. These waves are designed to produce an extremely high-frequency sound that is beyond what humans can hear. Ultrasound is used to bring about enough irritation in animals and make them stay away from highways.

Keywords Ultrasonic · Humans · Animals

1 Introduction

There are different reasons why individuals must repulse creatures from territories where they can damage individuals or devastate important goods and furthermore stay away from mishaps. This objective can be accomplished in various ways utilizing various techniques. We can recognize electrical, chemical, mechanical, optical, reflective bags, acoustical strategies, and so on. The benefit of the acoustical technique contrasting with others is: economical to utilize, not unsafe to creatures and safe for individuals utilizing it. This is valid under the presumption that ultrasound is utilized, which is indiscernible for individuals and does not cause any consultation harm, notwithstanding when presented to sound weight levels up to 120 dB. At the point when creatures hear these sounds they will just sit and gaze at the region where

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R. Kumar et al. (eds.), *Machines, Mechanism and Robotics*, Lecture Notes in Mechanical Engineering, https://doi.org/10.1007/978-981-16-0550-5_92

Multimodal Medical Image Fusion Based on Interval-Valued Intuitionistic Fuzzy Sets

T. Tirupal, B. Chandra Mohan, and S. Srinivas Kumar

Abstract Multimodal medical image fusion is the process of combining two multimodal medical images to increase the quality and to extract maximum information from the output image for better treatment and precise diagnosis. The fused image obtained from non-fuzzy sets lags with complementary information. Compared with fuzzy set theory, intuitionistic fuzzy sets (IFS) are determined to be more suitable for civilian and medical image processing as more uncertainties are measured. In this paper, an algorithm based on an interval-valued intuitionistic fuzzy set (IVIFS) is presented for efficiently fusing multimodal medical images and the final fused image is passed through a median filter to remove noise. Simulations on few sets of multimodal medical images are performed and compared with the existing fusion methods, such as an intuitionistic fuzzy set and fuzzy transform. The superiority of the proposed method is presented and is justified. Fused image quality is additionally checked with different quality measurements, for example, entropy, spatial frequency (SF), average gradient (AG), etc.

Keywords Image fusion · Fuzzy set · IFS

1 Introduction

With the latest developments in the field of technology, digital image processing systems have turned into a reality in developing the number of fields, for example, machine vision, medical imaging, and military applications. The consequence of the utilization of these strategies is an awesome increase of the amount of data available. To extract all the valuable information from the source images and to reduce the increasing volume of data, a powerful method is used in image processing called

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Role of Internet of Things in Modern Day Farming

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Introduction

With the world's population growing by the day, according to UN Food and Agricultural Organization sources, the world needs to increase food production by 70% by 2050, compared to current statistics. Howver, with the shrinking of agricultural land and changes in the climate that support farming due to dwindling natural resources, the agricultural sector is experiencing a downtrend, with many traditional farmers looking to other sectors for sustainability, which is a concerning situation.

To address workforce issues, many of them began automating agricultural processes through the use of machinery and technology. One such technology is Internet of Things (IoT), which is used to fill gaps in the supply-demand chain. This technology paved the way for farmers to increase crop yield and profits while also addressing environmental concerns. IoT Technology in agriculture has resulted in advancements in the development of smart machinery, wireless connectivity, and the use of IT services.

Intelligent farming based on IoT technology assists farmers in increasing productivity by taking into account critical parameters such as keeping track of soil testing, understanding environmental conditions, the amount of fertilizer used, the number of times agricultural vehicles were used, and the use of resources such as water and electricity.

Assessing these parameters assists them in improving their business and increasing their efficiency. The use of sensor technology in conjunction with IoT enabled them to gain knowledge on crop health and monitor the condition of the field from any location. Because it has addressed many issues in traditional farming procedures, smart farming has become an obvious choice for many of them. In the following sections, we will look at how IoT has changed the agriculture sector in various ways.

Agriculture Sensors

This section focuses on various sensors used in agriculture, also known as agriculture sensors.Based on their usage and application, these sensors can be classified into several types. The table 1 below shows a variety of sensors and their applications.

Rat Swarm Optimizer (RSO): A Novel Swarm Intelligence-Based Optimization Algorithm for Tackling Difficult Optimization Problems

B. Ravi Chandra[1,2(✉)] and Krishan Kumar[1(✉)]

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Abstract. For the evolution of swarm metaheuristic algorithms motivated by all animals kingdom in the year 2006–21 spans, significant optimizers had introduced. By the replicate action mechanism, the study is sorted out considering the living things. The consolidated information showed that nearly 62% of the algorithm which is based on animal behavior is motivated from vertebral and about 38% from spineless animals. This study dispense for resolving the searching of optimization issues by an algorithm which is a biography-influenced algorithm known as Rat Swarm Optimization. The habit of the rats in the environment is one of the motivations of this algorithm optimizer. Mathematical expressions of these actions, explanations of some actual restrained engineering outlined issues have been discussed in this paper. For testing the exploitation, exploration the combining and mathematical exploration had done for prevention of the suggested algorithm. Observing the results and comparing them with all other superior optimization algorithms, the suggested Rat Swarm algorithm is impressive in resolving the actuality issues.

Keyword: Metaheuristics · optimization · animal-inspired · exploration · exploitation

1 Introduction

For developing the analytical optimizers [1], and issue-free structure is introduced which is an effective Metaheuristics algorithm that guidelines and sequence of steps will provide. Currently, the liability is using the common structure and for the algorithm set up depending on the rules [1]. In recent years, the survey has conveyed that, the growth of suggested Metaheuristics algorithms for optimization and their advancement, searching methods, and hybridizations [2]. For reference and study purposes, the mathematical expressions for superior algorithms number of conference and journals papers were kept in IEEE [3]. By concentrating on all Metaheuristics a complete classification of analysis like the basics, updating, and applications were discussed by Hussain in [2]. In [4] agenda of the narrative of the set of evocative methods was discussed.

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This is a book on Development and Performance Evaluation of Medical Image Fusion using Undecimated DWT, Fuzzy Sets and Optimization Techniques. This Book makes Engineers, Radiologists and Doctors in better diagnosing a disease. Medical image fusion is an important tool in image processing. Medical images provide different types of information. It has turned into a typical practice in medical diagnostics and treatment to assist and extract image structures that may not be normally noticeable in images created by single modalities. CT image provides details of dense structures whereas MRI gives soft tissue information. Fusing both the images additional information is extracted in a single image called fused image. Various multimodal medical image pairs such as CT-MRI, MRI-PET, MRI-MRA, Xray-VA, MRI-SPECT and PET-CT are used in this work to extract additional clinical information.

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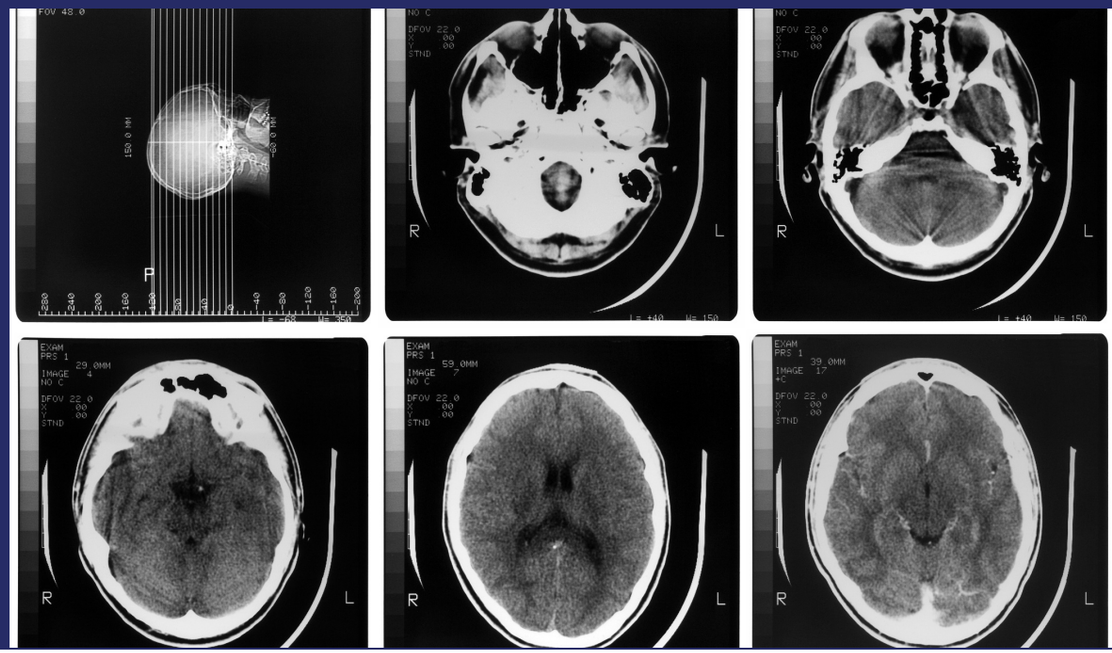

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Innovative Teaching and Learning Process during COVID 19

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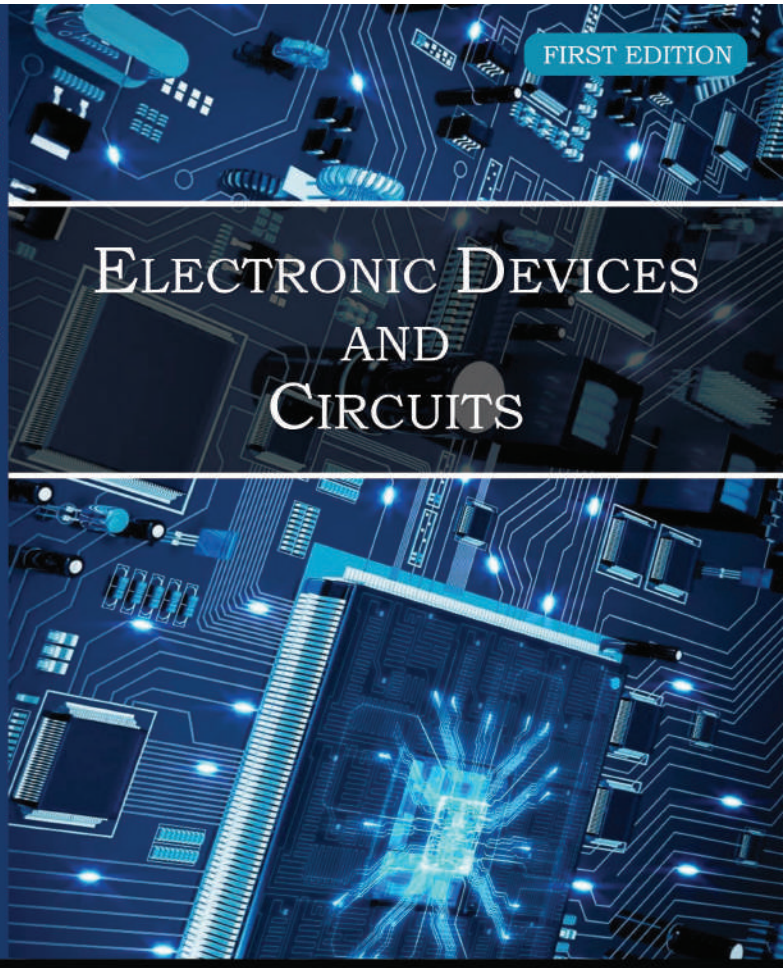

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Fundamentals of Digital Image Processing

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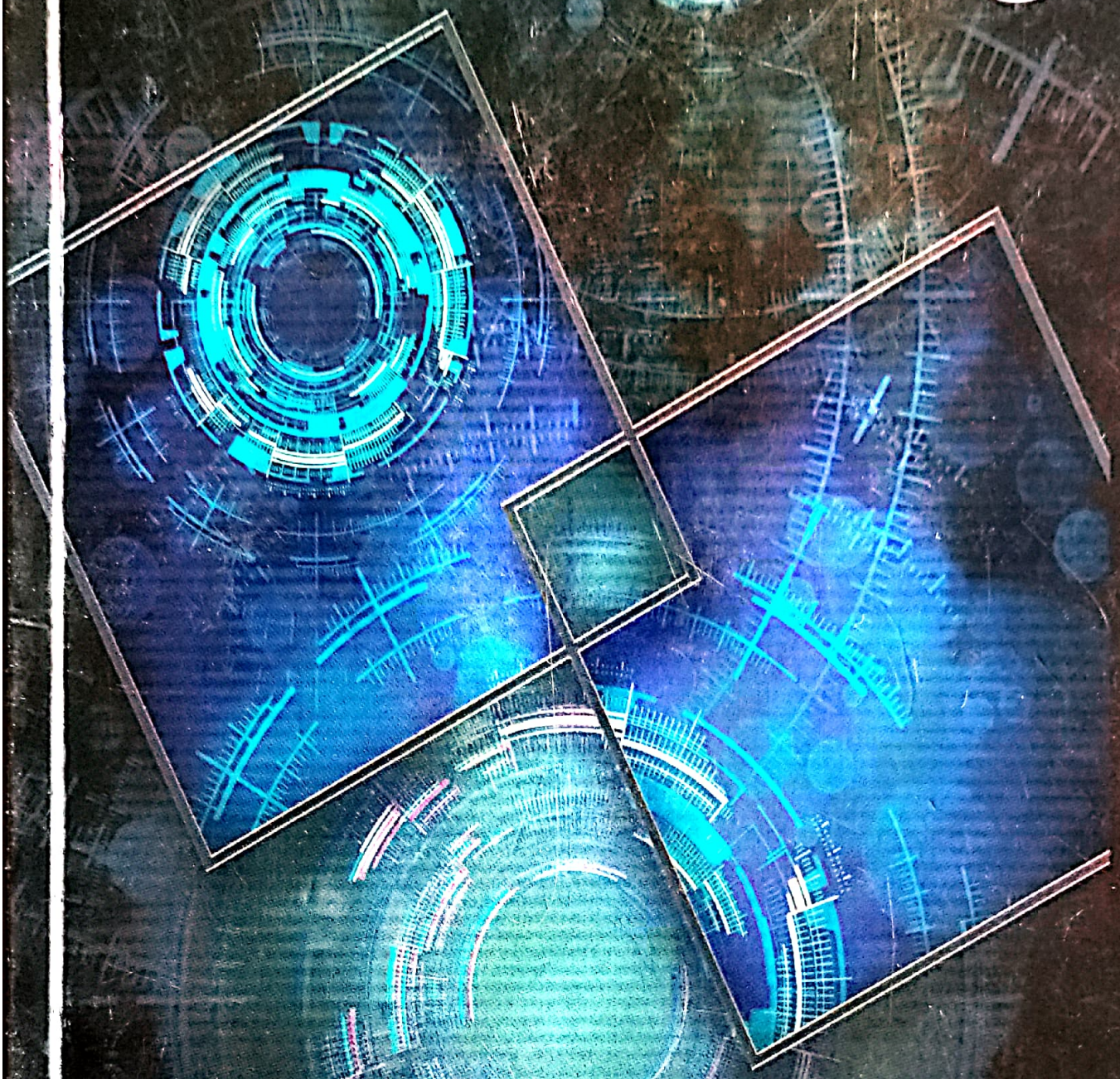
Data Mining



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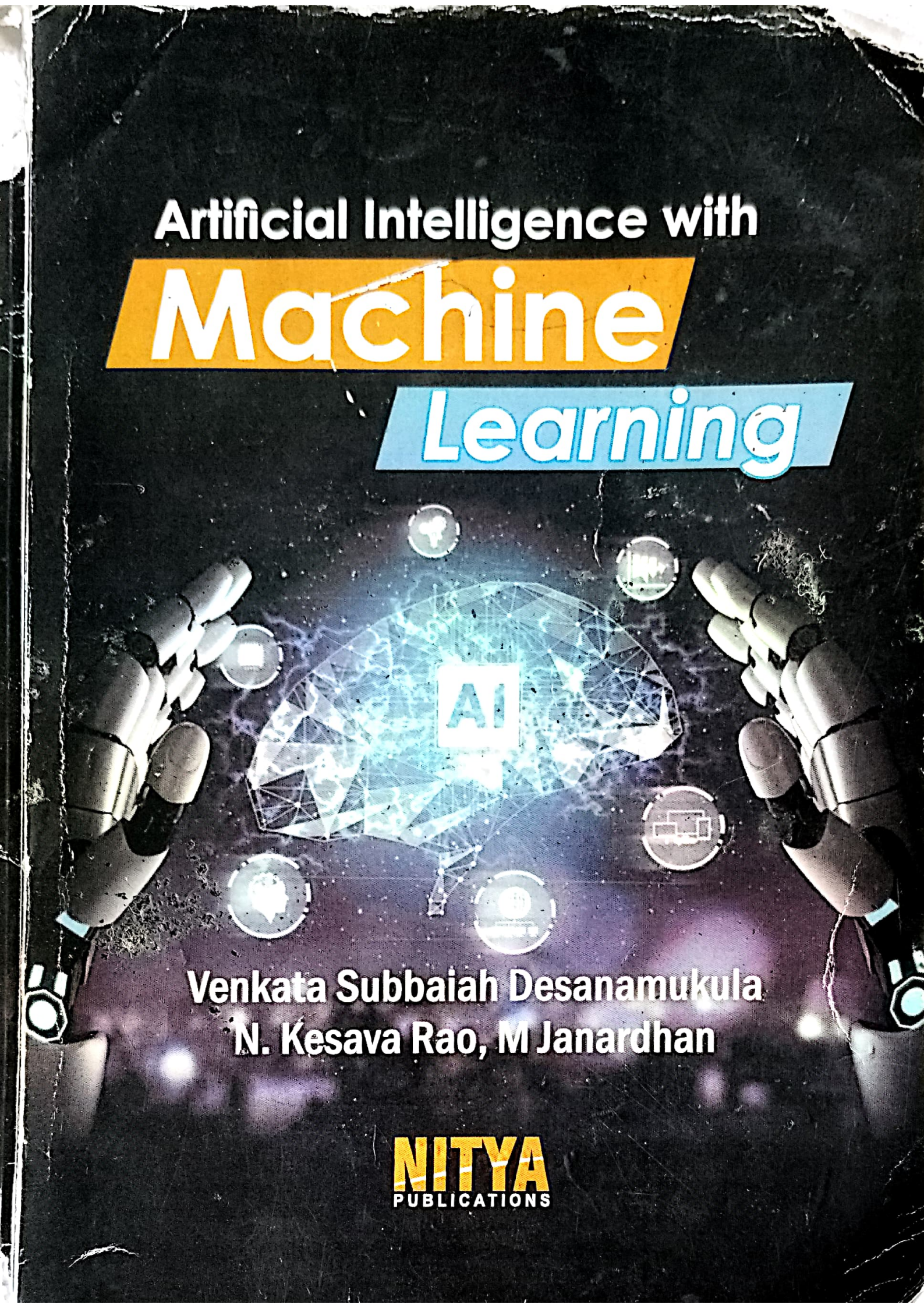
Artificial Intelligence with Machine Learning



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PUBLICATIONS

Artificial Intelligence with Machine Learning

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Design of Fuzzy Logic Controller-Based DPFC Device for Solar-Wind Hybrid System

V. Sowmya Sree, G. Panduranga Reddy, and C. Srinivasa Rao

Abstract A grid-connected system, in particular, relies heavily on the generation of electricity from Renewable Energy Sources. Because of the Renewable Energy Sources connection to a grid, problems with power quality have arisen. Harmonics, voltage swells, sags and other grid concerns are caused by power quality issues. As solar and wind energy are both free and environmentally beneficial, they are regarded as the finest options for remote (or rural) electricity. The combination of solar power and wind power is a reliable source of energy creating a constant energy flow by avoiding the fluctuations. But this hybrid system gives rise to complications related to power system stability. Most of the industrial loads are controlled by power electronic converters that are sensitive to power system disturbances. Hence the power quality issues diminution is more focused in recent times as it is vital in power supply industry. A number of power semiconductor devices have been developed to overcome the above power quality issues. Distributed Power Flow Controller, which is emerged from Unified Power Flow Controller, is considered as the best reliable device among the others. The DC link is the key distinction between these devices. In case of Distributed Power Flow Controller, the DC connection that links both converters does not exist. Later the system is examined with Fuzzy Logic Controller for Shunt control of Distributed Power Flow Controller. The results of the investigation demonstrate Distributed Power Flow Controller has improved achievement in conditions of harmonics reduction and voltage compensation. MATLAB/Simulink has been used to study the anticipated integrated hybrid system under unbalanced voltage situations.

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Performance Analysis of Diode Clamped and Flying Capacitor Multilevel Matrix Converter Used for DFIG-Based Wind System

G. Pandu Ranga Reddy, D. Mahesh Kumar, K. Rajesh, Y. Chintu Sagar, and J. Nageswara Rao

Abstract It is impossible to meet the increasing demand for electrical energy with the available deposits of fossils fuels that are already at the edge of depletion. Harnessing energy by means of alternative energy sources has been initiated in order to meet increasing energy demand in the future. Wind energy is found out to be more potential resource than all other renewable sources. The converters that are presented in the wind system play a major role for improving the quality of power. The test system comprises matrix converter attached to DFIG machine and the rotor of generator is coupled to the grid. The conventional matrix converter is then replaced with the proposed multilevel matrix converters. THDs of the voltages and currents at generating and load points are evaluated for the DFIG machine and it can run by diode clamped and flying capacitor multilevel matrix converters. For managing the switching devices in the converter circuit, the space vector pulse width modulation approach is devised. MATLAB/Simulink software is used to graphically show and evaluate the stator voltages and currents of the DFIG machine.

Keywords DFIG—double fed induction generator · DCMMC—diode clamped multilevel matrix converter · FCMMC—flying capacitor multilevel matrix converter · FFT—fast Fourier transformation · THD—total harmonic distortion · WECS—wind energy conversion system

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Comparative Analysis of Flying Capacitor and H-Bridge Multilevel Matrix Converters for DFIG Based Wind Energy Conversion System

G. Pandu Ranga Reddy, J. N. Chandra Sekhar, B. Naresh and M. Vijaya Kumar

Abstract This paper discuss the comparative analysis of the Flying Capacitor Multi Level Matrix Converter and the H-Bridge Multi Level Matrix Converter topologies (replacing the conventional two stage converter and simple matrix converter) connected to a DFIG machine feeding the rotor from the grid to increase the efficiency of the machine. The THDs are compared with the interconnection of the DFIG machine to the grid with flying capacitor and H-Bridge multi level matrix converter. The complete analysis and graphical representations of the voltage and currents of the DFIG machine stator are shown with FFT analysis of current waveform in MATLAB Simulink software.

Keywords Double fed induction generator · Flying capacitor multilevel matrix converter · FFT-Fast Fourier transformation · H-bridge multilevel matrix converter · THD-Total harmonic distortion

1 Introduction

Over the past few years demand of electrical power is increasing day by day, leading to increase in power production using fossil fuels. To replace the fossil fuel energy generation, renewable sources are penetrated into the grid system. These renewable sources support the conventional sources with small capacities denoted as distribution generation [1]. In distribution generation the solar energy generation is vastly

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