

**INTERNATIONAL CONFERENCE ON RECENT ADVANCES IN
COMPUTATIONAL TECHNIQUES:
(e-ICRACT 2020)**

26th - 27th June, 2020
Mumbai, India



Organized by

**AMITY SCHOOL OF ENGINEERING AND TECHNOLOGY
AMITY UNIVERSITY MUMBAI
PANVEL, MUMBAI-410206**



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Message from Vice-Chancellor

The foundation stones of Amity University Maharashtra, Mumbai are laid on the essence of academic pursuit, research and excellence. Excellence can be accomplished in any work with absolute commitment, hard work and perseverance. Since its inception, Amity University Mumbai has been involved in research and innovation, setting up an ecosystem for its students, faculties and research scholars.

The conferences are required to bring in knowledge sharing culture and input on emerging technology trends. I am delighted to note that Amity School of Engineering and Technology has organized the International Conference entitled "**Recent Advances in Computational Technology (IC-RAct 2020)**". Certainly, this type of conference not only brings all the researchers, industry personnel, students at one platform, but it also inculcates the research culture among the entire fraternity at all the level, thereby, contributing to the development of nation.

I hope that this conference will definitely promote research ideas among the participants paving way for new innovations and developments in Computational Technology.

I wish the organizing team of e-IC-RACT a grand success.

Prof. D. S. Rao
Vice-Chancellor

Amity University Mumbai

Welcome Message



As a Conference Chair and Director of Amity School of Engineering & Technology, Amity University Maharashtra, Mumbai, let me welcome and express my sincere thanks to all the stakeholders, delegates, participants and sponsors to IC-R ACT-2020. In the situation of pandemic and time to time advisory from Govt of India the large gathering may not be permitted in near future. Keeping in mind safety concern of the individual and best possible use of digital platform we have rescheduled and now conducting **IC-R ACT** on digital platform **on 26th and 27th June 2020 as e-IC-R ACT-2020.**

The response to this conference has been overwhelming looking at the number and quality of technical papers submitted in various themes of the conference. The research papers have been reviewed at the large possible extent for presentation and publication. I am sure the delegates will find it useful to identify the recent advances in Computational Technology. A conference becomes successful only with the richness of the technical content in the manuscript and in the presentations, enthusiasm of the participants to listen and discuss as well as to network.

We are thankful to the management of Amity University Mumbai, especially Hon'ble Chancellor and Vice-Chancellor for their kind support and motivation. I take this opportunity to congratulate all the members of organizing committee for their hard work.

I hope the deliberation and discussion will benefit every participant with the advanced knowledge shared on the platform. I am sure that this souvenir will be a valuable document to refer.

A handwritten signature in blue ink.

Dr Shrikant Charhate
Conference Chair-IC-R ACT 2020
Director, Amity School of Engineering & Technology

Message of Conference Co-Chairs

On behalf of the Conference Committee, it is our great pleasure to welcome you to the International Conference on Recent Advances in Computational Techniques (e-IC-R ACT 2020) in Amity School of Engineering and Technology, Amity University Mumbai. Under the themes of advances in computational techniques and its applications, innovative techniques and its applications in the field of engineering & technology, applications of RS and GIS and advancements in renewable energy resources and its applications, e-IC- RACT 2020 brings together researchers from all over the world to discuss the latest advances in engineering and technology. e-IC- RACT 2020 marks the first of its series being held in Mumbai, India.

The technical program of e-IC- RACT 2020 consists of 8 Sessions out of which 5 sessions are on the advances in computational techniques and its applications, 2 on innovative techniques and its applications in the field of engineering & technology and renewable energy resources and 1 on applications of image processing and remote sensing. The conference also features eminent keynote speakers from premier institutions like IIT Bombay and organizations like IDBI Intech which will highlight the innovative soft computing techniques in the field of water resources engineering and cyber security and its applications. The e-IC- RACT 2020 received around 170 paper submissions from India and other countries. All papers have undergone a rigorous review process and every research paper was reviewed by at least 2 experts to ensure good quality papers for publication in the **Elsevier-SSRN proceedings**. We would like to especially thank our Hon. Founder president, Hon. Chancellor, and Hon. Vice Chancellor for their continuous encouragement and support as well as the Conference chair, Committee Chairs, technical program committee members and the external reviewers for their dedication. We would also like to thank the Session Chairs, and the keynote speakers for their contribution towards this conference. Without their help, this conference would not be possible.

We are looking forward to have wonderful sessions on digital platform!

Conference Co-chairs,

e-IC- RACT 2020



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Energy Harvesting Applications using Piezoelectric Sensors

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Abstract— With the current scenario of global warming and with the rapid depletion of energy resources, the world is on a brink of an energy crisis. In the wake of this, renewable energy seems to be the only escape from this ever so looming crisis. Fossil fuels are a depleting resource of energy. The world is slowly but surely moving towards renewable forms of energy. In third world countries, large population is another problem along with an already existing energy crisis that requires an urgent solution. Renewable energy although developed to some extent is inefficient and cost ineffective. Developing countries like India are looking for solutions to help reduce load on nonrenewable energy (fossil fuels). To solve this problem the use of piezoelectricity and piezoelectric power generation may be used for power generation and energy harvesting. The researchers would like to propose some new applications of Piezoelectricity, which do not yet exist and may be implemented in the near future to solve the energy crisis in India. These solutions involve use of mechanical energy and convert it into electrical energy. This mechanical energy may be obtained from various sources, manmade as well as natural as explained in detail with calculations in this paper.

Keywords — Energy Harvesting, Piezoelectric Sensors, Renewable energy

Paper ID : IC-RACT-2020_paper_3

Identification and Recognition of Text and Face using Image Processing for Visually Impaired

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Abstract— Now a days, visual information is the most consequential information, so blind people or visually impaired people has this disadvantage as compulsory information about circumventing is not available to them. The objective of this project is to guide visually impaired people with an astute contrivance utilizing an Android Phone. This system predicated on Android technology is designed for them in order to solve the infeasible situation that affects the blind people. Our system presents an automated system which will provide them to read text patterns that are printed on documents. On the text patterns, localization and binarization are done utilizing OCR. The recognize text is converted to an audio and is provided to the user. Consequently, Deals with Character Recognition. The difficulty faced to identify people during conversation is a very big disadvantage for these people in many professional and edifying situations. To increase the accuracy of face recognition smart phones are utilized in these settings, we have an archetype and face recognition are tested for end users. This system uses Smartphone technology to provide audio output to the blind people.

Keywords —Android, Visually Impaired, Blind People, Smart device , Object detection, Text Recognition , Face Recognition, Optical Character Recognition (OCR), Local Binary Pattern.

Paper ID : IC-RACT-2020_paper_5

Waste Segregation using Smart bin and Optimization of Collection Routes

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Abstract—Waste management is one of the crucial universal problems at present. The rapid growth in world population, their intricate living styles and the pace of urbanization has increased the amount of solid waste produced. Therefore, having a legitimate checking component is an absolute necessity to deal with the situation. India has policies to deal with all kinds of waste but implementation is weak and not monitored effectively. Plastics stay an issue of concern. Protests over strong waste dumping across India have increased. Our Objective is to segregate and optimize waste management and collection process. The proposed system will inform the user and different authority when the waste bins are getting filled or when there is an unusual condition inside the bins. It will also provide users with a proper dumping technology to put their waste into the assigned bins and also guide them to the nearest bin if they encounter any problem with bins.

Keywords—Smart Bin, Waste Segregation, Collection route optimization, Waste management.

Paper ID : IC-RACT-2020_paper_6

Image Forgery: Detection of Manipulated Images using Neural Network

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Abstract— The emergence of new technology has resulted in mass usage of web applications which lets anyone crowd source anything. In the digitized world, using a wide range of online available tools, anyone can modify and edit images. So, it is necessary to ensure the authenticity of the images. Digital forensic techniques are needed to detect tampering and manipulation of images for illegal purposes [8]. This paper proposes a noble image manipulation detection system using neural networks. There are two techniques for identifying manipulated images in this project, the first one is metadata analysis and the second one is using Convolutional Neural Network. The metadata analysis checks the information contained within the image file and looks for tags that relate to faking. Error Level Analysis is used to detect the compression ratio of foreign content in a fake image.

Keywords—Image forensics, Metadata Analysis, Error Level Analysis, Convolutional Neural Network(CNN), Neural network

Paper ID : IC-RACT-2020_paper_7

Student Performance Analysis and Prediction of Employable Domains Using Machine Learning

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Abstract—To develop an ingenious predictive web application with the aim of solving various challenges which concern students educational institutions alike by taking into account a student's academic grades weighted skill-sets acquired by the aforementioned student. In light of the recent explosive growth of educational data available, the possibility of harnessing them into creating a working model based on the same has become viable. Educational institutes being the pillars of a modern society has long craved for reforms in the way student analysis takes place. Understudy's scholastic Education subtleties execution which when taken into thought is the entirety of different components like individual subtleties, social, mental and so forth. The instructive database contains helpful data for anticipating an understudies' academic performance and possible work domain based on computed skill-sets. The Data prediction model has facilitated the creation of a decision-making tool that allows better resource utilization with respect to students, their respective academic performances eventually predict their preferred work domain.

Keywords – deep learning, Keras, First Go model, skill computation, database hierarchy, complexity computing, analysis and prediction.

Paper ID : IC-RACT-2020_paper_9

Multi-Antenna Beam with IoT & Deep learning

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Abstract— In telecommunication, the base station preserves the communication between the network and the mobile user through a radio link. Based upon the frequency of the radio link, the communication series is attuned between a few meters to hundreds of kilometers. There are numerous protocols to provide the communication between the base station and the mobile user which are very similar to client server protocol. A pre-defined GOB package containing several data structures drives the network without any disturbance. Based upon the UEs request, GOB function creates a response table with the help of a fixed beam. Although GOB is easy to implement but it's not ideal and it can't handle the user's demand on time. It has multifaceted structure and goes through a lot of computation with very low performance This paper focuses on the use of DL and IoT with GOB & multi-antenna to have better performance, the best carrier distribution, low power consumption and better downlink & uplink throughput, etc. Based on AI technology with DL network, which can be injected with the base station system and it will be a model with thousands of well trained parameters and better algorithms, offering anis-optical predict value for carrier, beam, fault control etc. It will start with simple network as a good practice with 1 or 2 hidden layers. The training data will be generated by some random models. Once there is live data after deploying the model, the network will be re-trained for different scenarios to get better performance.

Keywords— Deep Learning (DL), Artificial Intelligence (AI), Internet of Things (IoT), GOB, Multi-antenna beam.

Paper ID : IC-RAC-T-2020_paper_12

An Analytical study of signs used in Baby Sign Language using MobileNet Framework

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Abstract— A communication via gestures is a method of non-verbal communication which uses body stances and motions pass on the message, thoughts, realities, feeling to the 10 viewers, and in this method of self-expression each body part assumes a significant job is known as Sign Language. Gesture based communication is valuable to not only deaf and dumb community, but also beneficial for individuals suffering from Autism, down's Syndrome, Apraxia of Speech for correspondence. The baby sign language is a method of communication between the parents and their toddlers by means of 15 gestures, clearly expressing their emotions and desires. In the present research work, a study of the existing literature has been carried out and then prepared a data set of still jpeg images for 53 odd baby signs, which were classified using transfer learning technique based on Deep Learning by utilizing a MobileNet, a class of Convolutional Neural Network. This model is further fine-tuned which reduces errors and increases 20 classification accuracy results. A classification accuracy of 85.8% has been achieved on the dataset prepared.

Keywords— : Sign Language Recognition, Deep Learning, Transfer Learning, MobileNet, Image Multiclass Classification

Paper ID : IC-RACT-2020_paper_13

Economical Analysis of Crop Suitability for Farmland

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Abstract:— India is a country in which agriculture is one of the most reliant occupations for the local people. It forms the epitome of income for a very large population as well as a contribution to India's global market. It has been described that farmers work based on trial and error while choosing their crops to be planted. They select their crop to be grown for that season based on their previous experiences or by consulting other farmers of the area, without merely analyzing the nuances of their farmland and concerning distinctly changing climatic conditions. This project aims at resolving the misconceptions of farmers and acquaints them with Technology by using analytics to help them adjudicate which crop would be most productively profitable to grow on that land. A survey with farmers of karjat(Location) made us realize that they are not very well versed in the agronomy or science of their soil. We devised a device that will take readings of distinct parameters and the economical input from the farmer(Yield, expenditure, etc) these data values will be used in the prediction of potential crops. In this project, previous year data shall be used to make a referential prediction module based on which the crops shall be selected. All results will be shown on a website. On the website, farmers will see some information and results of what crops they can grow. Another solution could be to make a pseudodata-set for ideal output and compare it with the given input and finally, the farmers are going to get a result as a shortlisted set of crops they can grow on their land for maximum profit.

Keywords- Prediction of crops, IOT-Internet Of Things, Maximum profit, Agriculture: Market Research and analysis

Paper ID : IC-RAC-T-2020_paper_14

Performance Evaluation of Multivariate linear Regression Model with LDA and PCA

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Abstract— In telecom industry, 4G datasets are commonly used to monitor health of LTE gateway nodes. Basically, 4G dataset exists in higher dimensional space contains more than 200 system level attributes. Regression analysis is continuously performed on these key attributes to predict system health by anomaly detection and accordingly preventive and corrective measures are taken. The major challenge telecom industry is facing about, how accurately system health can be predicted with optimal computational cost. It's imperative to reduce 4G data set to lower dimensional space before applying any linear regression technique. In this paper, Multivariate Linear Regression (MLR) has been performed on 4G data set after applying LDA (Linear Discriminant Analysis) and PCA (Principal component analysis) as dimensional reduction techniques. Regression results obtained from these dimensional reduction techniques are compared based on accuracy and computational cost and accordingly recommended for system health prediction model

Keywords – Higher Dimensional data, PCA, LDA, Dimension reduction, Multivariate Linear Regression, LTE, Prediction

Paper ID : IC-RACT-2020_paper_15

Experimental analysis on economic and portable smokeless oven

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Abstract— The present work includes the design, development and experimentation on smokeless oven. In the rural belt more than 60% people are using wood, charcoal and cow dung cakes for the purpose of cooking and other necessary purpose of heat supply. In most of the cases the wood burned for cooking purpose develops smoke which directly effects and harms human respiratory system, especially to women and children. Because most of the ovens are of open category type oven and on the concept of three brick oven principle in construction or excavated earthen construction type. Also heat loss to the atmosphere occurs in such type of oven. To overcome all such problems, a smokeless oven prepared by utilizing empty scrap oil tin and using empty paint or primer drum. To arrest heat loss an insulation barrier of 50mm thickness side wall has been maintained within the oven by using soil and mud. The flue gas outlet pipe has been fastened at the top side wall of the oven at an angle of 45° c and for a length of 3 m. exhaust outlet pipe.

Keywords— Smokeless oven, wood, cow dung cakes, charcoal

Paper ID : IC-R ACT-2020_paper_19

POSSIBLE MODELING OF SMALL BIOMASS POWER PLANT

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Abstract— The framework under investigation right now one of driving 6 MW biomass power plant in Maharashtra, India. The last force yield of the plant was affected without anyone else decisive occasions, for example, gear dissatisfactions. There are three force plants, for example, Thermal, Wind and Biomass is connected with electrical system through appropriated age thought. At whatever point earth inadequacies are going on electrical network, considering wind power plant, by then the issue stream gives to biomass power plant structure to turbo-generator set and such eccentric occasions because the force regard be underneath the eagerness of the electrical framework. It is communicated; there is spur of the moment separation of supply. Spur of the moment inaccessibility recommends shorter age and more modest points of interest and ought to right now restrict. This issue can be managed by a preoccupation model, which might be utilized to see the issue spaces in the plant. The appearing and beguilement approach has central focuses when showed up distinctively according to other choice assistance gadgets, unequivocally intelligent models. The critical information are gathered for evaluation of issue and the model is made utilizing expansion programming rather than general programming language under the action reenactment perspective. The model is composed, confirmed and certified. The model is then overhauled by including a qualification decrease methodology and by utilizing the occasion amusement perspective. At long last, the fundamental outcomes are examined and the most.

Keywords: Biomass Power Plant, KVA, PTW Fault, Simulation software modeling,

Paper ID : IC-R ACT-2020_paper_21

Study of Surface Quality during End Milling of SiC Reinforced Aluminium Metal Matrix Composite

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Abstract— In today's world the composites materials are replacing many conventional materials due to their excellent properties. Aluminum is a less weight and cheap metal that is available in plenty. Silicon carbide is hard abrasive material with good mechanical properties. The aluminum silicon carbide metal matrix composite is finding increased applications in many fields such as automobile and aeronautical applications due to its excellent mechanical properties like high strength, light weight, high specific stiffness and good coefficient of thermal expansion. But their usage is restricted due to the difficulty in the machinability. In this paper two Al/SiC metal matrix composites (Al6061/10-SiCp and Al6061/5-SiCp) by varying the composition of SiC. The composites consist Silicon Carbide (SiC) of 5% and 10% by weight. The composites are prepared by stir casting process. Shell moulding technique is used in manufacturing of the composite materials. The microstructure, tensile strength, compression strength and hardness of the composites are studied. End milling operation is performed on the metal matrix composite slabs by varying the machining parameters. Feed rate and depth of cut were varied by fixing a single spindle speed. The number of experiments is determined using design of experiments (DOE). The effect of the machining parameters on the surface finish is observed by measuring the surface roughness. This process is done on the two metal matrix composites. The effect of SiC percentage in composite and variations in machining parameters on the surface finish was observed.

Keywords—Al/SiC, MMC, Stir casting, Surface roughness.

Paper ID : IC-RACT-2020_paper_26

Smart Home Automation System

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Abstract:— In today's world of automation, most of the systems are automated such as homes, buildings and business sectors. The home automation system provides centralized control to the various home appliances which make the operations more convenient and also saves the energy that increases the comfort and quality of life. In this paper, design of automated home systems using various technologies is proposed. Wireless Home Automation System is set up using Wi-Fi technology, Raspberry Pi and Android Application. The system controls electrical appliances like lights, fans and also provides security services by giving alerts on users mobile whether user is inside home or not.

Keywords—Home Automation, Home Security, Raspberry Pi, passive infrared sensor.

Paper ID : IC-RACT-2020_paper_29

Ransom ware-Introduction

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Abstract— Ransom ware is type of Cyber malware which is used by attacker to block the computer system until some ransom is paid by victim .It propagates by malicious email attachments, links offering free software internet downloads etc. During given time it has to pay money which is demanded by ransom ware. This paper indicates the introduction of Ransom ware. How it works and types, attack methodology and threat carriers of Ransom ware and preventative precautions

Keywords—Ransom ware, locker, Encryption, Crime ware, Prevention

Paper ID : IC-RACT-2020_paper_33

Comparing Machine Learning Algorithms to Predict Admission for Post Graduation Courses.

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Abstract:— Today's world has become really competitive when it comes to higher education. There are many options that bewilder students in the selection of their university. There are many consultancy facilities that help students in choosing the optimal university according to their needs. Many algorithms can be used to build a recommendation system . In this paper we will be attempting to compare various machine learning algorithms that cater to the needs of building a recommendation system that will give the probability of admission of a student applying for Masters abroad. Various algorithms like Linear Discriminant Analysis (LDA), K Nearest Neighbours (KNN), Decision Tree (CART), Random Forest (RF), Gaussian Naive Bayes (NB) ,Support Vector Machines (SVM) will be compared in this paper. The results of the system will help the student in making the correct choice and apply for the most suitable university.

Keywords- GRE Score, TOEFL Score, Linear Discriminant Analysis (LDA), K Nearest Neighbours (KNN), Decision Tree (CART), Random Forest (RF), Gaussian Naive Bayes (NB), Support Vector Machines (SVM).

Paper ID : IC-RAC-T-2020_paper_34

A Novel Approach for Digital Evidence Management using Blockchain

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Abstract— In the proceedings of the court of law, it is of vital importance that the digital evidences are produced untampered during the entire Chain of Custody (Coc) process. Recent advancements in computer technology have enabled hackers to compromise with the integrity of the evidences. In order to secure these evidences from such external agents we have proposed a Blockchain model. Unlike the traditional security systems, Blockchain Technology uses cryptographic hashing in which each block has a cryptographic hash of its previous block i.e., A growing list of records that are called Blocks. These blocks are secure and tamperproof. The idea of this work is to handle the digital evidence from the time it is retrieved to the point it is presented as an evidence in the court of law. It ensures safeguarding of the evidence during the entire Chain of Custody process, which is fundamental to the idea of digital forensics. The aim of Digital Forensics is to maintain evidences in their most original form while performing a structured investigation by the collection, identification and validation of the digital information for the purpose of reconstructing events from the past. The proposed system ensures integrity, traceability, authenticity and security of the evidences.

Keywords—Digital Forensics, Digital Evidence, Chain of Custody, Blockchain

Paper ID : IC-RACT-2020_paper_37

Smart Shopping System with Android Application and Integrated Billing

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Abstract:— In metro cities there is a presence of a huge rush at shopping malls on holidays and weekends. This increases even more when huge offers and discounts are present. People buy a variety of items and place them in the trolley. The traditional approach that is used for billing which involves people standing in a queue and scanning each item of every customer with the help of a barcode scanner is time consuming. Every item has to be brought in the line of sight of the barcode scanner. There are times when the cashier has to enter the barcode number manually due to an error in scanning. Following such an approach results in long queues at the billing counters which discomforts the customers. This work presents an idea to develop a system in shopping malls to overcome the above problem. In order to achieve this, we have implemented an application that assists every customer and a server side website to assist the retailers. This approach will benefit each and every individual especially the disabled and senior citizens. By using this approach, a lot of time and man power can be saved.

Paper ID : IC-RACT-2020_paper_40

Classroom Lecture Attention Analysis Framework

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Abstract— The learning process in humans is not a uniform or identical process for all. Each person has different rate at which they may grasp concepts and begin to record them. Teachers are expected to supply knowledge in a form that everyone in a class may understand all concepts adequately. These situations lead the creation of a gap between students and teachers, when certain concepts are not explained properly. In such situation, a student may lag behind or the teacher may move through concepts quickly. Such a gap can be attributed to a communication or an engagement gap between the aforementioned teacher and students. The meaning of student engagement is generating and maintaining interest in subjects that students may otherwise be disinterested in. Educators need to know when these engagement levels begin to fluctuate. This will allow them to analyze the factors or activities which may lead to a dip or rise in attention levels. This allows educators to use both creativity and knowledge of their students to create lessons that foster engagement.

Paper ID : IC-RACT-2020_paper_41

Dynamic Review Modelling and Recommendation of Tourism Data

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Abstract:— A review can be defined as an individual's critical observation that maybe good or bad and maybe neutral also. Before visiting a tourist place reading reviews about it has become very essential to get an understanding of the place. As the number of websites publishing these reviews and the individuals who act as reviewers are growing rapidly, this makes it difficult for a potential tourist to read all of the reviews in order to make an informed decision on whether to visit the place or not. This gives rise to the need of a platform that generates a review that is generated from the combination of reviews from various websites. The reviews of tourist will be mined and summarized through this platform. The review mining will be done through web scrapping. In order to get a unique result only the features of the place will be extracted and basically the project tries to extract the positive and negative aspect of the place. In the project the task is performed in three steps: (1) mining the features of review of the tourist place; (2) identifying opinion sentences in each review and deciding whether each opinion sentence is positive or negative; (3) summarizing the result using natural language processing (NLP) for sentence formation.

Keywords—Review mining, Natural language processing, Beautiful Soup, Feature extraction.

Paper ID : IC-R ACT-2020_paper_42

Multi-Constraint Satisfaction and Solution Optimization using Genetic Algorithm for Solving Timetable Generation Problem

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Abstract— Timetable generation is an important part of every educational institution and is a complex and multi constraint satisfaction problem. It appears to be a monotonous job in every academic institute once or twice a year. In earlier days, timetable scheduling was done manually by a single person or a group of individuals, which is a very tedious task and takes a lot of effort and time. Planning a timetable is a very complex task. Timetable generation involves the efficient allocation of resources such as Rooms, Lecturers, Student Groups, etc. keeping in mind the availability, preferences and conveniences of the resource. The preferences and conveniences of the resource can include frequencies of a lecture, number of hours in a day and week, preferred time slots of a day, preferred working days, etc. This paper discusses the use of Genetic Algorithm and its operations, viz. Selection, Crossover and Mutation for solving of this problem. Based on the research, Genetic Algorithm is proved to improve this process as it focuses on various constraints and provides a global optimal solution rather than converging on a premature local optimum. The paper gives a conceptual design for the generation of a timetable for an institution using Genetic Algorithm.

Keywords— Genetic Algorithm, Selection, Crossover, Mutation, Timetable Generator, Timetable Scheduler, Optimization, Multi-Constraint Satisfaction.

Paper ID : IC-R ACT-2020_paper_43

Convergence studies on popular computational schemes for solution of Navier-Stokes equation for incompressible flow

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Abstract:— Most of the fluid flow situations may be described by non-linear partial differential Navier-Stokes equations. For incompressible flow, fluid density is assumed constant and hence equation of state cannot be utilized for coupling the continuity equation with the momentum equation. Researchers have developed and used the SIMPLE, SIMPLER and derived quantity based schemes for solution of incompressible Navier-Stokes equations. Solution convergence is an important criteria for judging any numerical scheme and hence convergence studies are performed on a standard 2-D lid driven cavity problem for SIMPLE, SIMPLER and stream function-vorticity based method to solve N-S equations for incompressible flow. Convergence studies are performed and reported for two values of Reynolds number i.e. 100 and 400.

Keywords—Incompressible flow, Navier-Stokes equation, SIMPLE, SIMPLER, stream function-vorticity, convergence

Paper ID : IC-RAC-T-2020_paper_44

Validation and Optimization of Vulnerability Detection on Web Application

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Abstract— The evolution of recent technology has resulted in massive usage of web applications. Millions of businesses use web as low-priced means of verbal exchange with over million internet users today. The worldwide nature of Internet exposes internet packages to be attacked from different locations with diverse degrees of scale and complexities. Hence, security of such web applications becomes an important aspect. This paper discusses about a user-friendly system which will help in detection of top 10 vulnerabilities as proposed by Open Web Application Security Project (OWASP) in 2019 [10] in web applications and also validate its performance according to a standard dataset. The tool will have sections for different vulnerabilities provided in the user interface. This provides the user liberty to test its web application against any specific attack from the list rather than performing for all attacks which is not required at the time; which we also save user's time. A detailed report for the concerned vulnerability will be generated, the risks associated will be identified and a descriptive solution for the identified risks will be provided.

Keywords — Web application security, Vulnerability detection, OWASP top 10 vulnerabilities, Standard dataset, Optimization

Paper ID : IC-RACT-2020_paper_46

Design and Implementation of In-memory Database System for Efficient Information Retrieval

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Abstract:— The aim of design and implementation of this database is to minimize the retrieval time of various operations like Read, Update and Delete then comparing the retrieval time on both the primary storage and secondary storage. The comparison will be done by using a suitable Data-Structure and an appropriate Indexing scheme which will help us to efficiently retrieve data. To perform this task selection of a suitable programming language is must. The result of comparison will be in the form of a time that is obtained by comparing the various database operations on both primary as well as secondary storage relies. IMDB's shows great results when we deal with massive amount of data and we can retrieve data in short amount of time as compared to the secondary storage. Variations in amount of dataset are considered to show that with increase in the dataset the system responds to the queries more efficient. Difference between this database and the existing databases is that it will be using Data-Structure to segregate and sort the present data first thereafter using indexing scheme in searching data and applying different operations which will result in faster responses. Selection of a suitable data-set and performing operations on a massive amount of data of that data-set and comparing the retrieval time.

Keywords— IMDB, RAM, Data-set, Data structures (Trees), Memory management Introduction

Paper ID : IC-RACT-2020_paper_55

Outfit Selection Using Colour Matching Application And Image Processing

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Abstract— The application is a fashion clothing app, that would assist users with their daily or occasional clothing choices, by pairing various outfits that have been extracted using the grab cut algorithm. These outfits will be placed over a 2D model that gives a visual result for the user to make a better choice. The algorithm for foreground extraction in this project is the Grab Cut Algorithm. The 2D model contains a skin tone feature that can be customized easily. A secure login page protects the user data. A 'Share' feature which allows users to share their customized ideas on a 2D model to other users on various social media platforms. Another feature 'hub' where the model designs can be shared and rated by different users.

Keywords—grabcut, shopping, fashion, apparel, unity

Paper ID : IC-RACT-2020_paper_59

Redefining search terms for Cybersecurity: a bibliometric perspective

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Abstract:— Cyber Security is a global challenge and experts are working hard to address the security cropping up day by day. The delineation of the keywords for the emerging area is important to enlighten the emerging technology's research path. In this paper, an overview of redefining the keywords for cyber security from a bibliometrics perspective has been provided. For the construction of keywords, a number of sources have been consulted. The collected keywords cleansed according to the definition provided by the National Institute of Standards and Technology (NIST) and the correlated keywords have been clustered manually. As a result, a set of keywords has been identified and justification for the same has been provided. These keywords can be used to download the related bibliographic records for the emerging discipline Cyber Security from the indexing databases.

Keywords— Scientometrics, Search Terms, Keywords, Delineation, Cyber Security

Paper ID : IC-RACT-2020_paper_60

Impact of Chemical Treatment and Bonding Agents on Mechanical Behavior of Polymer-Coir/Banana Natural Cellulose Fiber Hybrid Composite

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Abstract— Currently day by day most of the mechanical and supporting structures are replacing with the composite materials due to their dominating mechanical strength to weight ratio. The properties of the composite material depends on the type of the fiber i.e., natural or synthetic, size of the fiber (short or long), type of the resin etc and so on. The specialized properties are in demand by most of the industries can be achieved by using the hybrid polymer composites. The chemical or alkali treatment of natural fibers affects the properties of the composite material. The coupling agents in the composite material also play the vital role in changing the properties of the composite material. In the present work, the effect of the chemical treatment and coupling agents on the properties of the hybrid composite material were studied. Sodium hydroxide is used as chemical treatment agent and maleic anhydride polypropylene (MAPP) used as coupling agent. Coir/banana short fiber hybrid composite with polypropylene matrix is used as composite material. The effects of these agents on the tensile strength, Young's modulus, flexural strength, flexural modulus and impact strength have been studied.

Keywords— Natural fibers; cellulose fibers, Coir & Banana fibers, Hybrid composite, Polypropylene, Maleic anhydride Polypropylene (MAPP).

Paper ID : IC-RACT-2020_paper_61

Super Resolution Based an Adaptive Two Pass Normalized Convolution Using Multiple Low Resolution Images.

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Abstract:— Super resolution (SR) using signal processing is technique to identify the missing high frequency contents due to limitations of imaging hardware, accomplished by using spatio-temporal information available from LR images. The multi-image SR methods effort to reinstate High Resolution (HR) image commencing numerous wraparound artefacted and degraded Low Resolution (LR) images. In past three decades various researchers contributed in the field, but all are intuitive SR mechanisms. The proposed SR method is based on several LR images of the sight to be super resolved. Registration step of SR applies Keren's algorithm which is iterative and more accurate. Registration algorithm findings include both translational and rotational motion parameters, where rotation angle is obtained by using an affine transformation produced using Gaussian pyramid. The reconstruction is accomplished by structure-adaptive Normalized Convolution with double pass (SANC-D), using first robust and then adaptive approach. Subjective and objective analysis of the results of reconstruction indicates that the algorithm gives better super resolution images than the others at the expense of execution time of algorithm and it is system dependent.

Keywords— Super resolution, Registration, Reconstruction, Blurring, Interpolation, structure-adaptive Normalized Convolution- double pass

Paper ID : IC-RACT-2020_paper_62

Sustainable Concrete by Using Waste Foundry Sand and Carbon Fibre

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Abstract— The generation of solid waste i.e. used foundry sand (UFS) from the metal casting industries is growing continuously at disturbing quantity. In this study, an attempt is made to replace the fine aggregates by 30% using used foundry sand in the concrete. In addition to this carbon fiber added 0.25%, 0.50%, 0.75% and 1.00% to the volume of results indicate that the concrete of used foundry sand with 0.5% carbon fiber performance better than conventional sand concrete. Based on the test results, it is endorsed that UFS and carbon fiber can be used effectively in the manufacture of concrete without affecting the strength properties of concrete.

Keyword— UFS, Carbon fiber, waste, strength, etc.

Paper ID : IC-RACT-2020_paper_63

Designing of Perceptron Neuron Model in Verilog

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Abstract:— In the following paper, a Perceptron Neuron Model was developed and tested in Verilog (ModelSim) software. The perceptron is one of the early developed neural networks and implements as a supervised learning style.

Keywords— Artificial Neural Network, Output Layer, Hidden Layer, Neural Network, Neural System), Activation Function, Yield Layer, Perceptron Neuron Model, Artificial Neuron, Threshold Value, Final Output.

Paper ID : IC-RACT-2020_paper_64

Design Of Pneumatically Powered Bicycle

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Abstract— Due to the non-renewable nature of fossil fuels and its harmful effects on the environment the world has started moving towards renewable and eco-friendly sources of energy. The pneumatically powered bicycle is a step in the same direction. Pneumatically powered bicycle basically aims at using compressed air technology (CAT), to achieve higher speeds and improve the overall output of the vehicle so that it could be used as an alternative to fossil fuel powered vehicles even for covering considerably longer distances.

Keywords— Direction control valves (D.C.V), Double acting cylinder, Compressed air.

Paper ID : IC-RACT-2020_paper_65

Classification of electrocardiogram heart disease by Wavelet remodel and Radial Basis Function Neural Network

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Abstract— In the fast-moving world of today, where people are busy at work and less privy to their health. Our cities end up smart cities and villages connect to them. However, health facilities in villages and remote areas of the U.S. are still now not developed to a high volume. Treatment fees for low-earnings people are out of budget, so we are trying to create a machine where, If we use the device even remotely, the device itself will diagnose the coronary heart-related trouble at the same time as capturing the ECG and sending both additives to the end consumer for diagnosis. The Consultation charges could be reduced to a excessive extent and the main benefit of this system is that during a fragment of seconds we are able to contact the nook and nook of the global. The 2nd major advantage of this system is that during an emergency the non-medical person can also determine on cardiac arrhythmia. We have applied this paper with the idea of decomposing orthogonal wavelet-principally based signals and obtaining beneficial information. Recognition of neural network patterns is an appropriate software with a excessive ability to classify input styles with excessive performance right into a corresponding output target. Besides, we can ship to the analyst simultaneously prediction and original ECG for higher prediction of coronary heart arrhythmia.

Keywords— Electrocardiography (EEG), Arrhythmia, Wavelet Transform (WT), Artificial Neural Network (ANN), Multilayer Perceptron (MLP), Radial Basis Function Neural Network (RBFNN).

Paper ID : IC-RACT-2020_paper_73

A 16 Bit Arithmetic Logic Unit with Fast Computing Techniques

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Abstract— There has been various upgradations over the past decades in the processor's industry. With the advancing technology, there is need to develop processor's with fast processing speed. Arithmetic Logic Unit (ALU), forms the core of any processor, as it is the centre for computations. Here in this paper, we have demonstrated a design of 16 Bit Arithmetic Logic Unit, which comprises of optimized algorithms, resulting in fast computation rates and increased efficiency. The optimized design and connection between all the blocks provides better understanding of working of Arithmetic Logic Unit. Further optimized algorithms for performing various mathematical, logical, conditional operations, provided scope for developing more efficient ALU.

Keyword— Arithmetic Logic Unit, Fast Computation rates, Optimized Algorithms

Paper ID : IC-R ACT-2020 _paper_76

COMPUTATIONAL STUDY OF LEADING EDGE TUBERCLES ON PROPELLER PERFORMANCE

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Abstract:— Scientific studies over last two decades have established that employing protuberances on aerofoils significantly alter the flow field. Use of leading edge tubercles on aerofoils can influence fundamental aerodynamic behaviour like stall. Tubercles can produce similar effects as that of vortex generators. Available research has focussed on fundamental studies. However application of leading edge tubercles for aeronautic propellers is not yet well established. Some research has shown improved propeller performance through numerical simulation. As a part of this study a small two blade propeller is modelled with Leading Edge Tubercles and performance is analysed computationally.

Paper ID : IC-R ACT-2020 _paper_77

Investigating the Performance of AutoRegressive Integrated Moving Average and Random Forests in Retail Market

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Abstract— Data Science is one of the most contemporary technologies of today's century. The most sensitive and valuable input to machine learning systems is the quantity and veracity of data. Many recommender engines are developed based on massive datasets to provide comfort to mankind. These cover various sectors like food and hospitality, educational courses, banking and insurance, social networks and the most important of all travel and retail shopping. One of the intermediate steps before a system generates recommendations is to choose the best algorithm that best serves the purpose. Machine learning and deep learning algorithms play a vital role in developing such systems. This paper implements and investigates the performance of two algorithms namely, ARIMA and Random Forests which are applied on a retail dataset. The results are discussed based on the observations.

Keywords— ARIMA – AutoRegressive Integrated Moving Average, RF- Random Forest

Paper ID : IC-R ACT-2020 _paper_80

Innovation strategy and its dimensions

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Abstract:— Innovation strategy is the process of operation of any organization and it may affect the growth of businesses and communities. The changing business environment leads companies to innovation. This study examines the dimensions of the innovation strategy of SMEs. This study was processed by collecting data through a questionnaire survey in manufacturing SMEs in Chhattisgarh state. The principal component analysis method was used to analyze the data to obtain through the questionnaire. The results show the different dimensions of the innovation strategy of SMEs in the Chhattisgarh region. SME's leaders may use the findings from this study to develop or to analyze the performance of the firms.

Keywords- Innovation strategy, dimensions, SMEs

Paper ID : IC-RACT-2020_paper_81

Automated System For Source Code Plagiarism Detection

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Abstract:— Plagiarism of code is a serious issue in today's era. Plagiarism refers to the use of someone's data, language and writing without proper acknowledgement of the original source. Our project basically aims to detect plagiarism in subsequent code submissions made by students. We are hosting a front-end website from where the user will be uploading the source code, after this in the website the code submissions will be made to check the extent of plagiarism in the code submissions made by students. We will check the extent of plagiarism by checking multiple parameters like number of lines of code, number of functions used, number of loops used and the extent to which keywords match in subsequent codes.

Paper ID : IC-RACT-2020_paper_84

Detection of Hypertension Retinopathy and Diabetes using Machine Learning

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Abstract:— Medical conditions can be identified with only photographs of the eye which is called fundus images using computer automated processes. The task of distinguishing blood vessels by simply observing retinal images has proven to be challenging without the aid of technology. Various morphological features such as retinal veins, arteries, diameter, branching angle and length have diagnostic features. The tiny blood vessels can deteriorate and leak fluid into and under the retina which causes swelling of the retina. Hypertension Retinopathy has vascular damage caused by hypertension. Funduscopic examination shows cotton-wool spots, arteriolar construction, vascular wall changes, arteriovenous nicking, flame shaped hemorrhages, optic disc edema and yellow hard exudates.

Keywords - Fundus Photography, Retina, Eye, Hypertension Retinopathy, Diabetic Retinopathy, Hard Exudates, Cotton Wool

Paper ID : IC-RAC-T-2020_paper_87

VESSEL DETECTION AND AUTOMATIC IDENTIFICATION SYSTEM

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Abstract—The Automatic Identification System (AIS) provides abundant near real-time information of moving vessels i.e. ships, submarines etc. in the sea of the whole world and has been widely used in the fields of vessel collision avoidance, and motion prediction Maritime Situation Awareness (MSA) and ocean surveillance. Also the development of satellite based AIS is used which ultimately will help to expand the range of AIS. This in turns will converge the data collection, which solves the problem of lacking AIS data in high seas. At the same time, AIS provides a huge source for data mining for maritime traffic analysis. For this data mining the clustering algorithm called K-means is applied to deal with AIS.

Keywords- Clustering, Maritime Traffic Analysis, Space-based AIS, K-Means Algorithm

Paper ID:IC-RACT-2020-paper 90

Analysis of Passive Infrared Detector for Target Detection in an IOT Based Outdoor Environment

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Abstract— Passive infrared (PIR) sensor is widely used in target detection applications as it has remarkable advantages such as low power consumption, less computation and less communication overheads. Non cooperative target tracking such as human or animal in an outdoor environment using wireless sensor node enabled with PIR sensor is very complex process. Sensor characteristics and environmental influences are the factors which make it difficult, use off the shelfed binary PIR sensor for this task. This is an attempt to put forward the issues and challenges and its possible solution, while developing a system with the PIR sensor for target detection and approximate tracking in an outdoor environment.

Keywords—Passive Infrared Sensor (PIR), Wireless Sensor Node, Target Tracking, Human Detection.

Paper ID:IC-R ACT-2020-paper 91

Study on Melted Waste Plastic Bottles as Binder in Plastic Mortar

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Abstract— One of the big challenges that the solid waste management community of present and future generations will face is the proper disposal of plastic waste such as carry-bags, covers, bottles, containers, packing materials etc. They are causing health hazards to humans and animals, and polluting and damaging the environment through all the modes; air, soil and water. One of the effective reuses of plastic waste can be done by incorporating it through civil engineering materials on a large scale. This paper is about an experimental study of recycling waste plastic bottles made of polyethylene terephthalate (PETE) mixed in melted form with quarry dust into a plastic mortar. The characteristics of plastic mortar cubes such as density, uniformity and compressive strength are studied. The plastic waste and quarry dust mortar proportion of 1:3 resulted into a density of 19.3 kN/m³, ultrasonic pulse velocity value of 1.45 km/s and compressive strength of 14.8 N/mm². Also, the effect of adding fine material like cement as filler material in plastic mortar was studied and found that it resulted into an increase in density by 2.25 %, ultrasonic pulse velocity by 65 % and compressive strength by 52%.

Keywords— environment, sustainability, plastic waste, quarry dust, plastic mortar, binder

Paper ID : IC-R ACT-2020_paper_96

Determination of Aerodynamic Characteristics of NACA 0012 using ANSYS for high Subsonic Flow

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Abstract— Aerodynamic characteristics play a very important role in determining the forces acting on the aerofoil sections and thereby are very important for airplane performance. Determination of these characteristics can be done in two ways - experimental and simulation. The data obtained from experiments and simulation complement each other in the current era. The presented work deals with the determination of aerodynamic characteristics such as lift coefficient (Cl) and drag coefficient (Cd) of a NACA 0012 aerofoil at high subsonic speed for inviscid flow condition by performing numerical simulation using commercial software ANSYS.

Keywords: NACA 0012; Mach number; Shock wave; Lift coefficient (Cl); Drag coefficient (Cd)

Paper ID: IC-RACT-2020-paper 97

Prediction of Having a Heart Disease Using Machine Learning

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Abstract — In the world of medical science, decisions are made based on the stored data and the experience of the doctors. There can be chances of errors, longer time in diagnosis, increase in cost as well for treating the vital organ heart. Current database system in hospitals contains large volumes of data which can be used to predict the health of the heart. This data can be turned into useful information that can be used to make an intelligent decision-making system which can predict the chance of occurrence of disease. This system provides the ability to predict the occurrence of heart disease in an individual. It uses the convolutional neural network for prediction. Using important factors such as age, sex, cholesterol, ECG slope, it can predict the probability of person getting prone to heart disease. These attributes are nothing but the Clinical Data of the Patients.

Keywords— heart disease, heart health prediction system, Convolutional Neural Network, machine learning, activation function

Paper ID: IC-RACT-2020-paper 98

YOLO (You Only look Once) Technology and Its' Impact in Field of Object Detection

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Abstract— This paper will discuss in length about YOLO (You Only Look Once), a path breaking addition concerning object detection, YOLO technology in detail, the advantages and risks it carries and how this technology will massively shape up the future generations. Two review papers are considered which explain YOLO technology and the latest version of YOLO, namely YOLOv3. Also discussed are the characteristics of YOLO technology along with its' advantages, drawbacks and improvements. The Network design, architecture and the training provided to the neural network YOLOv3, a new updated version over YOLO technology and in comparison, to its' predecessor how does it fare is mentioned. How YOLO technology will shape up in future, what will be its impact. A clear insight about YOLO and its' functionality is provided here.

Keyword— YOLO, R-CNN, DPM, Detection System

Paper ID: IC-R ACT-2020-paper 100

Dynamic Resource Allocation Method Based on Symbiotic Organism Search Algorithm for HPC Application

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Abstract— Cloud computing (CC) merits such as scalability, reliability, and resource pooling have enticed experts to implement their high-performance computing (HPC) applications on cloud. Nonetheless, HPC applications can pose critical defies on cloud that could emasculate the acquired merits if appropriate care is not taken. The main objective of this research is to develop a task scheduling algorithm that convalesces HPC application performance on software-defined network (SDN) with abridged cost. Moreover, a novel framework is adapted to improve HPC task scheduling performance on cloud in an SDN-enabled network, which is a fundamental part of CC and used for resource delivery. A proposed algorithm for task scheduling architecture manages scheduling tasks. Also, the proposed algorithm monitors CPU utilization, cost, and provides best optimal results when compared with conventional algorithms such as first come first served, round robin, and optimized time synchronization approach.

Keywords- Cloud computing, high performance computing, software-defined network, task scheduling

Paper ID: IC-R ACT-2020-paper 101

Crosstalk in Flat Cables for Transmission of Single Ended Digital Signals Over Medium Distances

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Abstract— Differential signaling is used in most wired transmission scenarios due to its signal integrity. Twisted pair cabling is the most popular choice for differential transmission modes as seen in its usage cabling for ethernet, RS485/RS422, HDMI, CAN bus, and USB.

The popularity and ready availability of twisted pair circular cabling makes it a tempting choice for medium to long distance transmission of a group of digital signals. However, certain use cases cannot take advantage of differential transmission modes. This could be due to a variety of factors like additional cost of differential trans-receivers, environmental factors affecting performance of conversion circuitry, and added complexity. The use of typical twisted pair cabling for single ended transmission may prove detrimental for signal integrity. Usage of flat cabling in such scenarios enables the retaining of the single ended architecture with the added benefit of high signal integrity.

This paper will examine the advantages of flat cabling in medium distance, less than 4 m (13 ft), transmission of single ended signals in the context of signal to signal crosstalk.

Keywords—crosstalk, flat cable, single ended transmission, unbalanced transmission

Paper ID: IC-RACT-2020-paper 103

Thermal Analysis of DC Arch Dams Due to Variation in Seasonal Temperatures

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Abstract— Three-dimensional finite element analyses is carried out to study the thermal stresses and displacements in double curvature concrete arch dams. By defining boundary conditions directly on the dam, this leads to a stiffer behavior. Hence two models one with rigid boundaries and other with lumped springs was developed subjected to thermal loads. An arbitrary spring stiffness of 1.0E+07 KN/m² to 1.0E+11 KN/m² is adopted for lumped springs. For the parameters adopted an arch dam is subjected to thermal loads for summer and winter temperatures. The temperature of 21.7°C and 11.10°C is adopted for summer and winter respectively. Under water temperatures in the reservoir are estimated. The performance of dam model with spring stiffness of 1.0E+11 KN/m is almost identical with rigid model. The stresses and displacements in dam in summer season are more compared to winter season. Maximum stresses are observed on downstream surfaces of dams hence much care should be taken while designing the downstream section of dam.

Keywords- Double curvature concrete shells, stress factor, aspect ratio, Rigid model, lumped model

Paper ID : IC-RACT-2020_paper_105

STRUCTURAL ANALYSIS OF ELECTRONIC HOUSING USING ANSYS WORKBENCH

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Abstract— A satellite consists of various components, part of which includes electronic housing whose prime function is to protect the electronic components structurally. This paper mainly focuses on the structural analysis of the electronic housing of a satellite as it undergoes a specific amount of load in real flight conditions. This helps to estimate the margin of safety of different materials in a situation which replicates loads being applied in three cartesian coordinate directions which are x, y and z respectively. The end results were obtained by performing simulations, which were carried out using commercial software ANSYS Workbench.

Keywords- Electronic Housing, Structural Analysis, Margin of Safety

Paper ID : IC-RACT-2020_paper_106

D2F: Description to face synthesis using GAN

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Abstract:— All the recent breakthroughs in the field of deep learning have enabled us to extract lower dimension knowledge from higher dimension data, this has led to state of the art utilization of tremendous data. At the same time, the generative aspect of deep learning models are rapidly emerging, out of all the generative models Generative Adversarial Networks (GANs) are immensely popular due to its ease of implementation and enhanced performance. Tasks like mapping textual data to visual data (i.e. lower dimension to higher dimension) is a feat which is still not easily achievable even by experts. The challenge here is extracting every possible information from lower dimension data to generate comparatively higher dimension data. This work collaborates GANs and Natural Language Processing (NLP) to come up with a model which will effectively translate human facial feature from characters to pixels. In other words the model will generate realistic human faces given the description of the faces. This paper compares different architectures of GANs trained on different datasets. It also specifies dataset collection method using crowd intelligence and also proposes a deep learning model for description to face synthesis.

Keywords—NLP, GAN, Text2Face, Transfer learning, Generative model

Paper ID : IC-RACT-2020_paper_108

Enhancement in security of Android Devices using Malware Prediction with Machine Learning

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Abstract— Due to large number of malicious applications in android devices, security of user data has become a serious issue. We need to detect and predict malware in android application to keep devices secure. SIGPID (Significant Permission Identification) approach extracts Significant Permission required in android application and uses this information to predict malware using supervised learning algorithm. DREBIN method performs broad static analysis and gathers required features from manifest file and application code. The features like network addresses, API calls, hardware components, permissions are mapped into joint vector space. Applying suitable machine learning algorithm to this vector space the system classifies application as malicious or benign application which results into improvement in the prediction accuracy. SIGPID aims to use less number of permissions to predict the malware presence whereas DREBIN aims at giving accurate predictions. We have used principles of these two algorithms to implemented malware detection system Safroid which aims to use less number of permissions and give accurate predictions.

Keywords— Permission, malware detection, SIGPID, DREBIN, smart phones.

Paper ID : IC-RACT-2020_paper_109

IoT based Sewage Monitoring System

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Abstract:— This paper aims to measure and analyse the realtime levels of toxic gases. In order to ensure safety of the workers working under such severe conditions. This project attempts to device an IOT technology that shall detect the humidity, temperature levels and mixture of gases, sensing each type of gas to measure its level while keeping track of the real-time dynamic changes in the above factors. If levels exceed beyond threshold, it shall send an alert on the connected mobile devices of the authorised people who are remotely located in the job. If any blockage is encountered, it can be monitored with the help of live video streaming.

Keywords — Sewage, IoT, Raspberry pi, ThingSpeak, GSM

Paper ID : IC-RACT-2020_paper_112

Analysis of Precipitation Extremes for Coastal Districts of Maharashtra

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Abstract— The annual extremes of rainfall for a region would be useful in planning of the irrigation pattern, reservoir operation, etc. For the coastal belt of Maharashtra, the rainfall is very intense and this is different from the inland districts. The present study aims to estimate the extremes of precipitation for the coastal districts of Maharashtra, namely Sindhudurg, Ratnagiri, Raigad, Mumbai City, Mumbai Suburban, and Thane. The data used for analysis is annual precipitation totals from the year 1901-2000, obtained from Indian Meteorological Department. To get the extremes of precipitation, peak-over-threshold sampling technique would be employed. Magnitude for 50 and 100 year extreme rainfall would be estimated by fitting suitable extreme value distribution from the Gumbel, the Weibull and the Generalized Extreme Value distributions.

Keywords-Extreme Value Distribution, Gumbel, Weibull, Generalized Extreme Value Distribution

IC-RAC-T-2020_paper_114

A Review on Nano Materials for Cement Composites

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Abstract— The size of the nano materials varies from 1nm to 100nm depending on the types, according to ASTM. Due to excellent mechanical properties, nano materials find wide application in construction industry over conventional materials. The inclusion of nanoparticles in cement composites reduces micro pores by filler effect, forms dense cement matrix, thus prevents micro crack propagation. In addition, it contributes to strength by the secondary reactions with cement composite. This review papers summarizes the properties of various nanomaterials based on mechanical, chemical deterioration, physical deterioration, durability and other properties of cement-based materials. Additionally, research needs are identified based on the gaps in the current literature on cement-based materials using nano materials.

Keywords— nano materials, cement composites mechanical properties, microstructure, concrete, thermal properties

IC-RACT-2020_paper_119

Analysis of Reinforced Concrete Element using Applied Element Method

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Abstract— The numerical methods such as Finite Element Method (FEM) are used for the linear and nonlinear analysis of the structures. Alternatively, Applied Element Method (AEM), which is recently developed displacement-based method can be effectively adopted for tracking the structural collapse behavior during all stages of analysis i.e. from zero loading to complete collapse. In AEM, structure or structural members are discretized with rigid elements connected by springs in which the deformation characteristics of the structure are represented by normal and shear springs connected between the faces of rigid elements. In the present study, application of AEM is illustrated through the static linear analysis of reinforced concrete simply supported beam considering it as a two-dimensional(2D) problem. The analysis results in terms of displacement and stresses are compared by considering the different number of springs and variation in size of an element. It has been observed that smaller size of an element with a smaller number of springs gives accurate results. To show the accuracy and applicability of method, results obtained by AEM are compared with the FEM results.

Keywords— Applied Element Method (AEM), Finite Element Method (FEM), Static analysis, RC simply supported beam.

IC-RACT-2020_paper_120

THE EFFECT OF RADON ON THE BUILT ENVIRONMENT—A REVIEW

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Abstract:— Radon may be a naturally arising, radioactive gas found in soil and rock. It leaks into homes through cracks in the foundation, walls and joints. In some parts of the nation, ground water can be a major source of radon. Radon is a naturally occurring radioactive gas with variable geographic existence, which Concentrates in the built environment .The radon concentration within any residence varies substantially with time. There is generally both diurnal and seasonal variation, and also considerable variation from year to year. Measured radon concentrations vary widely between houses, depending not only on temporal variability, but also on the local geology, on the details of building construction and on the habits of the occupants. All homes should be tested for radon. Among non-smokers, radon is the leading cause of lung cancer. In many cases lung cancer can be prevented, this is especially true for radon-related lung cancer. There is therefore an ongoing need for research to resolve definitively the issue of radon mitigation and to define truly effective anti-radon measures, readily installed in domestic properties at the time of construction. It is therefore recommended that compulsory testing be introduced for all new houses in Radon Affected Areas. Also one of the main goals is to accommodate more accurate estimation for protection from the risks of long-term exposures to radon gas in the indoor environment.

Keywords— Radon, Radioactive gas, indoor environment, testing

IC-RACT-2020_paper_121

Space-Time Adaptive Processing Techniques (STAP) for Mitigation of Jammer Interference and Clutter Suppression in Airborne Radar Systems: A MATLAB Implementation-based Study

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Abstract— Radar Systems are used for the detection of objects by transmitting the electromagnetic waves in the free space. They operate in environments where there is a high possibility that the desired echo signal interferes with the signals from other sources. These signals include clutters and jammer signals. The jammer is a device that continuously emits the wideband radio signals in the radar environment, to saturate the receiver with noise or false information. Thus, the total received signal has three components- returns from target, clutter, and jammer combined i.e. it is a three-dimensional signal. The use of conventional signal processing techniques is not desirable, as they cannot separate the desired echo signal from the other components, because the statistics of these components present in the received signal is not known. This problem needs to be accounted for, in airborne surveillance radars, as they have to identify and locate the targets in multiple interference environments. The Space-Time Adaptive Techniques (STAP) is a combination of spatial and temporal filtering that can nullify the jammer signal and recognize the slow-moving targets. These techniques filter the signal in the angular and the Doppler domain for suppressing the unwanted signals. This paper presents a theoretical study of space-time adaptive coding techniques, and the MATLAB implementation of STAP algorithms; namely, SMI, DPCA, and ADPCA, to suppress clutter and jammer interference in the received pulse.

Keywords—component, formatting, style, styling, insert (keywords)

IC-R ACT-2020_paper_122

Design and Development of a Web-Based Robotics Simulator

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Abstract—On the advent of Industry 4.0, there is an increasing demand in software for robot modelling and simulation. Most currently available solutions run natively on the user system which cuts down on the availability and also takes a toll on the computing resources. The idea of this paper is to develop a novel robotics simulation software that runs out-of-the-box in a web-browser. It doesn't need installations and high computing resources. Any machine capable of running a web-browser can test and use this simulation software. Major objective remains to target the didactics and educational market where students can learn and validate kinematic equations visually by running them directly on a robot or on a simulated version of the same.

Keywords—robotics, simulation, kinematics, modelling, didactics

IC-R ACT-2020_paper_123

Cashless Employee Expense and Transacting System

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Abstract- World is all about instant work and easy doings. It's all about technology and enhancing the usage of these technologies. 21st century is a time of cashless work and being digitized. When an accountant tallies the expenses manually, there are chances of going somewhere wrong. It may be a big loss or a minimal loss depending upon the expenses made by employee or some kind of wrong order placed by company due to misconception. This led us to nullify the manual errors or we can say human errors. For initiating cashless transactions for daily expenses of company and paperless work, tally of cash and tracking of daily expenses made by employees leads us to the development of software

IC-RACT-2020_paper_125

A Prognosis of The Cause and Effects of Randon On the Built Environment

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Abstract -Radon is a naturally occurring radioactive, colorless, tasteless and odorless gas which is chiefly present inside the earth. The earth is heterogeneous and not homogeneous. The concentration of radon inside the earth therefore varies with latitude, longitude and altitudes. The earth has two sources of heat –solar energy on the surface and radioactive decay of certain materials within itself. Radon is a gas which is released during the intermediate stage of radioactive decay inside the earth. Anthropological activities involve two major types of interventions into the earth –transfer of load and/or anchoring and for prospecting. Both these activities release radon onto the surface. The various ways in which this harmful radioactive gas is released into our confined indoor spaces is discussed and presented. The causes for the same are analysed and the harmful effects of the same are enumerated. Simple, practical and out of the box solutions are proposed to alleviate this problem. It is also ensured that all the mitigation measures proposed are sustainable, eco-friendly and have the least impact on the environment. It is also reiterated that unless some positive and decisive steps are taken at the earliest the sixth extinction of our planet is a mere formality.

Keywords--Anthropological activities, radioactive, indoor spaces

IC-RACT-2020_paper_127

Respiratory Sound Classification for Remote Diagnosis

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Abstract—With rapid development of electronic control technology in internet technology in modern medical industry and with the development of electronic stethoscope we are one step closer to the remote diagnosis as the hardware part of it is readily available but there are limited software system that can classify stethoscope sound. Diagnosis or classification requires recognizing patterns. If the quantity of input is huge, it becomes difficult to identify these patterns. The collected data is often a nonlinear data, the conventional models fail to identify patterns. These challenges can be tackled with the use of latest technologies like Machine learning. Till date, many approaches were successful and now, with the use of Neural networks the loss factor is close to nil. In this paper machine learning algorithm is implemented on Mel- spectrogram images in the convolutional neural network (CNN). Since considering MFCC features to classify sounds is generally accepted classification method for audio, its scale is used to find patterns in Spectrogram of samples using CNN. Sound is classified in four classes: (1) healthy (2) Containing Wheezes (3) Containing Crackles and (4) Containing both. Accuracy results of the experiments were around 63%-65%.

Keywords—Convolution neural network, Spectrogram, Machine Learning, Mel Frequency Cepstral Coefficients (MFCC)

IC-RACT-2020_paper_128

Village development Planning-A Case Study in Thane District

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Abstract--This report consist of Initial findings through survey of the Palsoli village District Thane, Maharashtra. Survey was done in the presence of Village Head, Sarpanch and data was collected from villagers itself. This report consists of possible facilities such as sanitization, water availability, sewage treatment and various other socio-economic developments which will improve the life of the villagers.

Keywords—smart village, methodology, survey, planning

IC-RACT-2020_paper_129

Placement Prediction by Mining Student's Information

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Abstract—Placement opportunities are abundant in market due to many emerging technologies. Skill development of student should be done in placement point of view. Detail analysis of students should be done according to their curricular and extracurricular achievements. Using this analysis better steps can be taken to improve student's placement in particular institute. Data Mining algorithms can be used to tackle voluminous data of students in educational institute and to predict student's placements in better way. This paper compares various data mining algorithms based on its accuracy, advantages and disadvantages and scope and to create a website to predict the student's placement chances and their performance to improve for the same.

Keywords—placement; data mining; prediction

IC-R ACT-2020 _paper_130

Application for Prediction of Waviness in Water jet Cutting of Granite

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Abstract—Granite has broad applications as construction material, architectural stone, a decorative stone, bridges and counter-tops. Black pearl granite is excavated in large blocks providing slabs of suitable sizes. Machining of rocks with conventional method has low surface finish and incorporates cost in final finishing. Abrasive water jet cutting is used for precise cutting of granite. Burst occurs at the other side of the material which is undesirable. The burst has to be minimum for high production and minimum wastage of cost. The experiments were carried on Black pearl granite. By using Taguchi method, a L27 Orthogonal Array was formed for deciding number of cuts. Input parameters such as traverse speed, abrasive flow rate and standoff distance were varied whereas water pressure and abrasive size was constant and burst area was the response which is to be calculated. After experimentation, with the help of ImageJ software area of burst is calculated for each cuts. Thereafter with the help of data acquired, coding was done in ANFIS in order to predict the burst area. The motive behind this is to increase the precision of machining and to reduce the cost behind the finishing of granite.

Index Terms—Abrasive water jet, Burst, prediction, Taguchi,ANFIS.

IC-R ACT-2020 _paper_131

CFD analysis on heat loss from solar cavity receiver of parabolic dish receiver system

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Abstract—In a solar cavity receiver the overall efficiency depends on the thermal losses occurring from it. These losses mainly comprise of three types i.e. conduction, convection and radiation. Out of which convection losses constitutes of the majority of these losses. In this paper the CFD software analysis of a cylindrical cavity receiver of length 30 cm and internal diameter 20 cm is carried out to study the temperature variation within the cavity receiver due to heat losses. The analysis is carried out for internal wall temperature of 500K, 1000K, and 1500K. The cavity receiver's inclination angle varied from 0°, 30°, 45°, 60° to 90° at ambient temperature 293 K.

Keywords— Conduction, Convection, Radiation, Solar cavity receiver, CFD, Heat loss

IC-R ACT-2020 _paper_132

Stability analysis and synchronization of fractional-order complex Lorenz systems

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Abstract— Chaotic nature of the fractional-order system and synchronization have been two very significant problems in the nonlinear sciences, even in the complex fractional-order system. In the present manuscript, a study of the fractional-order complex Lorenz system which exhibits a chaotic behavior would be analyzed by numerical simulation results. Stability analysis of fractional-order system has been studied and obtains some useful results for the researcher working in the nonlinear dynamics. Synchronization of the proposed systems is also studied, and it has been achieved by active control method.

Keywords— synchronization, chaotic system, Lorenz system, fractional derivative, active control method

IC-R ACT-2020 _paper_133

Spoken Language Understanding using Pre-training Technique

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Abstract— We have proposed a pre-training methodology for end-to-end SLU models and used datasets to show that our pre-training techniques improve performance for SLU training sets. The end-to-end SLU systems map speech directly to intent instead of taking the long, time consuming way of speech to text and text to intent mapping. For high accuracy, a large amount of training data is needed. We will try to reduce the data requirements of end-to-end SLU model. A new SLU dataset is introduced which improves performance both when the full dataset is used for training purposes and also when only a small subset is used. We also make additions to the model where new phrases are learnt by the model which is new and not trained to the model during the training phase.

Keywords— Viterbi, HMM, ASR, NLU, WER

IC-R ACT-2020 _paper_134

Force Calibration of A Hemispherical Model Using Reddy Shock Tube

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Abstract- Shock tube study is done to understand the characteristic behavior of various types of shock wave, pressure and temperature variations observed at hypersonic speed. To study these characteristics in an inexpensive and simplified way, an instrument called Reddy Shock tube was designed, also known as Table-Top shock tube. Shock waves are generated purely by the application of manual force. In the test section, a flow of Mach upto 6.5 is generated. The attempt here was made to calculate force acting on a hemispherical model at hypersonic flow regime. It is an impulse facility, where the flow operates only for a fractional second. The pressure transducers were used to characterize the shock wave properties. Similarly, an accelerometer was connected to the model, which determined the acceleration value required to find the axial force.

Keywords : Hypersonic; Reddy Shock Tube; Reddy shock tunnel; Force

IC-R ACT-2020 _paper_135

CFD investigation with variable orientation of orifice at throat in self-priming venturi scrubber

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Abstract-- There is wide application of venturi scrubber in Containment Filtered Venting System (CFVS) of Nuclear Power Plants (NPP) in order to remove the gaseous pollutants from contaminated gas in Reactor Core of nuclear power plant. The different orientations of orifice at particular angle are used in the same direction & opposite direction of gas flow respectively. The Computational Fluid Dynamics (CFD) results of these arrangements are compared with the orifice pipe which is normal to the direction of gas flow. The pressure drops and velocity at throat affect the performance of Venturi Scrubber. A commercial software “ANSYS WORKBENCH” tool has been used for this research work. The velocity field of gas flow is obtained by using K- ϵ turbulence model. The momentum conservation principle is used to calculate Gas velocity distribution. The Euler-Euler approach is used to understand behavior of fluid dynamics inside the venturi scrubber. Pressure drop and liquid to gas ratio for various mass flow rate of gas is determined by CFD analysis of Self priming Venturi Scrubber.

Keywords: Nuclear Power Plant, Iodine removal efficiency, pressure drop, velocity at throat.

IC-R ACT-2020 _paper_137

Design and optimization of heat transfer in double helical concentric coil heat exchanger

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Abstract—Due to the compact structure and high heat transfer coefficient, helical coil heat exchangers find extensive use in industrial applications such as power generation, nuclear industry, process plants, heat recovery systems, refrigeration, food industry, etc. Helical coils are used for transferring heat in chemical reactors and agitated vessels because heat transfer coefficients are higher in helical coils. Standard helical coil heat exchanger has some drawbacks out of which pressure drop is major concern. In this paper effort has been made to calculate effectiveness of a new design of double helical concentric coil and the results are compared with standard double helical concentric coil at different pitch.

Keywords— Helical coils, Concentric coils, ANSYS CFD

IC-R ACT-2020 _paper_138

Smart Gesture Recognition for Disabled People

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Abstract—Wheelchairs are utilized by the individuals who can't stroll because of physical ailment, injury or other handicap. As per the World Health Organization and World Bank Report there are 70 million individuals are having some type of inability. Which leads to a wide scope in development of smart wheelchair. In this research work, we present a Wi-Fi and Bluetooth based smart wheelchair which can be controlled by finger or hand gesture using a gesture recognition sensor i.e. APDS 9960 and also can be controlled by the eye blink motion with the Bluetooth connection using a web cam and can also be controlled by the voice recognition using Google Assistance. As the traditional joystick develops a certain strain on the patient hand this prototype will be a great help for those patients. This prototype can be varied between the voice command, hand gesture and eye tracking.

Keywords—Wi-Fi, Bluetooth, Gesture Recognition, voice command, eye tracking

IC-R ACT-2020_paper_139

Anomaly based Intrusion Detection System using Deep learning methods

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Abstract: Intrusion Detection System using Deep learning technique- Convolution Neural Network (CNN) with LeeNet and ResNet50 without representational learning is proposed in this work, to achieve improved network security through improvement of detection of attacks. NSLKDD99 datasets have been used for validating the proposed system. Results of proposed model with ResNet 50 are compared with LeeNet and accuracy improvements are discussed.

Keywords— Intrusion, CNN, ResNet, LeeNet

IC-R ACT-2020_paper_141

IoT Controller

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Abstract —A sensor is a sophisticated device that is frequently used to sense and produce the response in the form of electrical and optical signals. There are a lot of sensors present like touch sensor, temperature sensor, ultrasonic sensor, speed sensor, pir sensor. Therefore there should be some device to store, manage, update the sensor data in real time. The motive of our project is to build a web application that not only manages the sensor data but also predicts the life of the sensor's batteries. The web application has the functionality of displaying the location of the various sensors with the help of Google Maps API. This project is built in such a way that any organization can be able to utilize seamlessly. This project is not any organization specific. There are some other features of the project such as it can generate reports of one or more sensor performance, displaying the properties of every sensor like date formats, hardware specification, location.

Keywords—Sensor, Internet of Things (IoT), Cloud Computing, Remote Sensor Management, IoT Map, Battery life Prediction, Remaining Useful Life, Report Generation.

IC-R ACT-2020_paper_142

Application of Machine Learning Techniques for Epidemic Forecasting

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Abstract — Infectious diseases such as H1N1, SARS, Zika, and the recent COVID-19 continue to pose a global threat. It is crucial to characterize diseases and their dynamics, in order to understand an ongoing epidemic efficiently. This paper discusses two existent models of prediction for outbreak and severity that helps understand how machine learning algorithms can facilitate accurate predictions of epidemics and their related patterns, consequently influencing decisions to contain its spread. This paper implements an extrapolating model that demonstrates the proposed system using associated data from the COVID-19 epidemic. The model uses time series forecasting to predict the future number of confirmed cases using current trends in the data. The future scope discusses the uses of other machine learning techniques to discern epidemiological trends.

Keywords — epidemiology, machine learning, outbreak prediction, time series forecasting, coronavirus disease.

IC-R ACT-2020_paper_145

Detection of virus using Artificial Intelligence and Machine learning concepts

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Abstract— this paper is devoted, to study of recent viruses, detection and prediction of viruses using AI and Machine Learning Techniques. Recently in December 2019 a new virus was discovered named coronavirus. So, to detect this type of viruses in the future and present, we can use AI and Machine Learning concepts for the detection of viruses. Artificial intelligence (AI) research is growing rapidly within the medicine research. In 2016, Artificial Intelligence projects on health care attracted more investment than Artificial Intelligence projects within any other sector of the global economy. It is well, known that in feature we may overcome the different types of new viruses across the city. The detection of the viruses is done with the help of the MS Kinect sensor. This sensor analyses human breathing, and if that person is not able to breathe properly then that person must be suffering from coughing, sneezing, etc. This particular sensor will be fixed at the public places if it identifies the person who is suffering from breathing problems, the person will be sanitized or will be provided with the mask or if it is a serious condition that person will be admitted to the hospital for the treatment. So that the spreading of virus decreases at public places. This sensor can also be used for checking the heartbeat pluses of the humans and animals also. Animals should also be monitoring with their health conditions because there are chances of spreading viruses from animals also.

Keywords - Artificial Intelligence, Machine Learning, MS Kinect sensor, Thermal Scanners Infra-red rays, 'Time of flight' technology.

IC-R ACT-2020_paper_146

Review on Optimisation of Water Distribution Network by Leakage Reduction

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Abstract— The ever-increasing demand for water and the limited resources available for the same pitches strongly for water conservation. Water Distribution Systems are found to have potential to conserve the water lost through them because of various operational and non-operational reasons. There is an immediate need to manage water distribution system, by reducing leakages in them. This paper give insight about analysis of Water distribution system and estimation of leakages as a potential component of Non-Revenue water in WDN. Further various techniques for leakage management are identified. Pressure management could be very efficient for minimizing the leakage in WDN.

Keywords— Water Distribution Network WDN), Non-Revenue Water (NRW), Leakage, Pressure Management.

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Designing of Electric Vehicle using MATLAB and Simulink

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Abstract: With the advancing technology, it has taken a drift in the automobile industry with the introduction of Electric Vehicles. Electric Vehicles provide to humanity as a sustainable mode of transport, by not deteriorating the environment. This paper describes the procedure for modelling of an Electric Vehicle in MATLAB and Simulink, by explaining various- Motor Model, Battery Model, Power Model, and Regenerative System. Through Simulink, the designed Electric Vehicle is simulated and various factors like- Motor Torque, Vehicle Speed, State of Charge of Battery were calculated by providing Driving Cycle. The various observed factors were analysed for improving the model.

Keywords: Simulation, Modeling, Motor Torque, Vehicle Speed, State of Charge of Battery, Driving Cycle.

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Accident Black Spot Detection on Greater Mumbai Region

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Abstract -Traffic accident Black Spot detection on urban settlement using unsupervised learning algorithms and accident analysis using statistical methods on Greater Mumbai Region is carried out in this study. At present the traffic accident analysis in Mumbai is a manual process. Through the clustering analysis on Mumbai accident data from January 2018 to September 2019, we put forward a method to detect accidental blackspots effectively using DBSCAN algorithm.

Keywords -Traffic accidents, Black Spot, Unsupervised Learning, Clustering, DBSCAN.

Computation of Static Modulus of Elasticity and Poisson's Ratio of M20 Grade Self-Curing Concrete with PEG-400 as a Self - Curing Agent Using IS Code and ASTM Standard.

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Abstract— the concrete does not attain its original shape after unloading as it is not an elastic material. It is a non-linear material as depicted by its stress-strain curve. Hence, the elastic constants like modulus and Poisson's ratio are not strictly applicable to such a complex, heterogeneous and nonlinear construction material. However, an elastic behaviour is assumed for the analysis and design of concrete structures by making use of these constants. The modulus of elasticity of concrete is its inherent property of undergoing an elastic deformation. Higher value of modulus leads to an enhanced stiffness of the structural elements. Curing is one of the important parameters influencing the modulus value. Curing caters to maintaining the required temperature, preventing water loss and shrinkage associated with it. The Shrinkage Reducing Admixture (SRA) in the form of Polyethylene Glycol 400 (PEG 400) liquid, added as a self-curing agent, plays an important role of reducing the water evaporation from the concrete mass, resulting into an improved water retention capacity of the concrete. PEG 400 is hydrophilic in nature. It plays a dual role of controlling evaporation and attracting moisture from the atmosphere. Self-curing leads to uninterrupted and effective curing by retaining the required quantity of water for an adequate cement hydration and maintaining the high relative humidity (RH), thereby resulting in to hard and dense concrete, with reduced thermal and shrinkage cracks. To provide a practical solution for the non-availability of better quality water or lack of proper curing due to negligence, producing a self-curing concrete is a sustainable option. Generally, self-curing is advocated for the High Strength Concrete (HSC) having low water-cement ratio (w/c), because of chemical shrinkage associated with Portland cement hydration and low permeability of these materials. Moreover, it is an effective way to reduce the self-desiccation, autogenous shrinkage, plastic shrinkage cracking, drying shrinkage cracking and water absorption. Though the structural elements like Reinforced Cement Concrete (RCC) slabs are cast using lower grade concrete like M20, generally with higher w/c ratio, they are directly exposed to the harsh environment while concreting and a considerable period after concreting. To add to this, many times, the curing is not sufficient on the construction site. This leads to the undesirable situation of concrete properties not getting developed to their full potential values; the vital parameters being strength and modulus. Modulus of elasticity of concrete is known to be a function of its compressive strength. Development of required modulus of elasticity, for a structural element with a particular concrete grade, makes it adequately stiff thereby satisfying the limit state of serviceability for deflection. Excessive deflection of any structural element is highly undesirable phenomenon; moreover, it is well established fact in RCC theory that the slab depth is governed by the deflection criterion. This paper discusses an experimental investigation of short term static modulus of elasticity and Poisson's ratio of M20 grade of self-curing concrete using PEG 400 as a self-curing agent. Three different dosages of 1%, 1.5% and 2% of PEG 400, expressed as percentage of weight of cement, were used. The conventional cylindrical specimens were subjected to water curing for 28 days, whereas self-cured cylinders were exposed to air curing in an open shaded area for 28 days. Indian Standard: IS 516-1959 and American Society for Testing and Materials (ASTM) standard: C469/C469M-2014 were followed for testing conventional as well as self-cured specimens. The laboratory investigation was aimed at comparing the values of the two elastic constants obtained for the self-cured concrete with that for the conventional mix, by both the methods. Though conventional concrete had highest values of density and compressive strength, it was observed that concrete with 1.5% PEG 400 exhibited greatest values of modulus of elasticity, by both the methods. Dosages of 1.5% and 2% of PEG 400 resulted in to higher values of Poisson's ratio in comparison with that for conventional mix and 1% PEG 400 mix.

Keywords — PEG 400, self-curing concrete, short term static modulus of elasticity, Poisson's ratio, chord modulus, concrete density, stiffness, porosity.

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Comparative Study of Breast Cancer Detection Methods

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Abstract—Breast cancer in women is the second-largest cause of cancer deaths. If it can be diagnosed early, it is also of the most curable forms of cancer. Breast cancer diagnosis is very confusing process. There are various methods used for diagnosis of cancer detection which will also increase uncertainty in detection. Late detection of cancer in patient or false detection both are not good for patient. In order to achieve correct detection of cancer in patients researchers are trying to use machine learning and deep learning algorithms for accurate detection of breast cancer. These algorithms will help doctors to detect breast cancer correctly and they can feel more confident about treatment .Various datasets, pre-processing methods, several machine learning and deep learning methods and accuracy parameters are used for the detection of cancer summarized in this article.

Keywords—Breast Cancer, Machine Learning, Deep Learning, Accuracy, Classification

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Amendments in Entrepreneurship & Innovation because of COVID -19 Pandemic.

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Abstract: - The bond of innovation and entrepreneurship began from early days of humankind .From the accidental invention of fire because of striking of two stones together during the ages of early man to using those fire power for building steam engines, gas stoves and war weapons things get invented either intentionally or accidentally .Inventions and discoveries not only create new things but they open a wide areas of innovation so that things can be made better and more efficient. We humans have never stopped inventing and innovating things. Our mind keeps on seeing things from varied perspectives and opinions. Those opinions are put into action and reality. If the practical application of any new logic theory, patent or strategy becomes successful it comes into the market of usage that how people can use this new invention so that they can trade it and can gain their own benefits. In other words, innovation and entrepreneurship are like magnets who always stick together. Time is the ultimate game changer in the world of invention and innovation that builds the platform of entrepreneurship. As time passed, we evolved from being early man living in caves to civilized human beings. Not only our lifestyle has innovated but our surroundings and environment have also got evolved over time. Let's begin with education, during early years people used bark of trees and leaves as the medium to write things on but as time changed and the paper was discovered people started manufacturing them and using them as primary medium to write upon. Many companies have built their fortune upon innovating the quality of paper .From the days where children sat under the tree or in a small hut like place which they treated like schools where great scientists and philosophers were their teachers to building high class fully facilitated campuses which is capable of providing every possible platform for the students to rise, shine and innovate the existing things. So inspiring students at school for inventions that could make things better is Innovation and investing capital for a school in order to gain profits and assets is entrepreneurship. But as we explore our history Mother Nature has always played a much bigger role in the cyclical interdependence of entrepreneurship and innovation with the introduction of some or the other calamity and pandemic which forces human race to see things in a different perspective and break the monotonous chain of how they invent and sell things. We all are aware that before the introduction of COVID -19 our lives seem to be pretty monotonous like Companies enhancing existing technologies, people claiming their copyright on those techs so that they can gain profit out of it and general public using it for their personal interest thinking that this way of living is only life . With the introduction of corona virus into this world people shut every possible way of what they were doing normally like visiting friends, conducting meetings etc. and started prioritizing towards those areas which they were paying the least attention to. With the advancements in life style people seem to pay least attention those minute things like cleaning every single bit of yourself and your stuff before entering your house. This habit seemed nothing but now it has become mandatory to do so. Cleaning hands several times seemed a waste of time but now it has become a “new normal”. Actually Mother Nature through corona virus wants us to pay attention to those areas which are actually necessary in and for our lives.

Keywords – Entrepreneurship, Innovation, Amendment, Digital Era, COVID-19, Corona Virus.

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Fault Diagnosis Method for Deep Groove Ball Bearings 6008, 6208 and 6408 based on “Hertz’s Contact theory” using Engine oil and Gear Box oil

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Abstract - A bearing is the machine component which allows relative movement between the components of machines and equipment, along with transmitting the load. The most commonly used bearings are the Rolling Element Bearing. Rolling element Bearings generally fail suddenly before giving any indication. Many monitoring methods are in use to monitor the condition of bearings. The existing methods are either very costly or require major changes in the setup. The present work is based on a method, simple and inexpensive and capable for online condition monitoring of rolling element bearings. The methodology includes analytical determination of the Elasto hydrodynamic lubricant film thickness based on “Hertz’s Contact theory”. The formula developed includes the Electrical Resistance between balls and races of the bearings and the Electrical Resistivity of the lubricants. The Electrical Resistivity is determined by using a simple Test Rig. Further the Electrical Resistance is also determined by using a simple Electrical Circuit along with measuring instruments on Rolling Element Bearing Test Rig at different loads and speeds. The Electrical Resistance is directly related to the lubricant film thickness present between the balls and races of the bearings, more the thickness, more will be Electrical Resistance. Related formulae of lubricant film thickness were developed for test bearing 6008, 6208, 6408 and test lubricants 20W40 (Engine oil), G 90 (Gearbox oil). Experiments were performed for speed range from 800 rpm to 1200 rpm (in steps of 100 rpm), and load range from 40 Kg to 120 Kg (in steps of 20 Kg), on Rolling Element Bearing Test Rig. Useful conclusions are drawn at the end of the experimental work based on the results.

Key words - Engine and Gearbox oil Bearings 6008 6208 and 6408 lubricant film thickness Electrical Resistivity.

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Self-Driving Cars: The Road Ahead

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Abstract—this paper focuses on overview of self-driving cars and its current scenario in India as well as globally. An Autonomous vehicle is not a new concept to the world but it has gained more popularity in last two decades. Self-driving cars work on basic three steps, perception, decision making and control. This paper explains different levels of automation in self-driving cars along with basic perception components and sensors which an autonomous vehicle needs to identify the surrounding. The paper also briefs about history and discuss the challenges to implement self-driving cars on road. Further the paper discusses the upcoming areas in which budding researchers in India can work to achieve up to third level of automation in self-driving cars

Keywords—Autonomous Cars, Autonomous Vehicle, Self-driving cars, Intelligent transportation systems

Design of an automated guided vehicle System for press shop of automobile Manufacturing plants in India.

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Abstract— the study is focused on the implementation of the Automated Guided Vehicle System for the feeding of raw material from storage into the press line in automobile manufacturing companies. The primary objective is to develop an AGV technology which increases the efficiency of the press line by reducing the errors or delay times caused during the feeding of the raw material. The secondary objective is to make a robust system that is in sync with the industrial revolution 4.0 and ensures enhanced safety. For this purpose, the approach is discussed which can satisfy the purpose and which is more efficient and satisfy the objectives of the study. The working of system is explained with flow charts and diagrams.

Keywords—automated, guided, vehicle, control, logic, traffic, management.

Response of monsoon fed rivers to unusual rainfall during June 2013: Evidences from Saryu River.

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Abstract—The present study is aimed to investigate the causes of large-scale slope destabilization in the monsoon dominated Saryu River valley in the Uttarakhand Himalaya during the June 2013 disaster. Unlike major rivers in the Himalaya which are snow fed, Saryu is a monsoon fed river. Geomorphologic ally, it flows in a stable topographic domain (compared to its glacial counter parts). It has been observed that during June 2013, Saryu River valley experienced largescale slope destabilization. Field observations indicate that the Saryu River valley was affected by four major types of slope failures. These involved the (i) destabilization of angle of repose by toe erosion, (ii) wedge failures (iii) scavenging of surface sediment due to heavy rainfall and (iv) slope destabilization due to road construction activity. The slope destabilization (except wedge failure) is ascribed to the lateral migration of Saryu River channel due to high sediment water ratio.

Keywords— Landslides, Cloud burst, Toe erosion, wedge failure, monsoon, Kumaun Himalaya.

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Autonomous Pipe Inspection Robot

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Abstract: A pipe inspection robot is a machine used to inspect, provide real time solutions to the pipes and cleaning of the pipes (scales or the deposits formed due to the fluid flow). There are already number of designs available for the pipe inspection robot. This paper proposes a new pipeline inspection robot with parallelogram linkage mechanism which is designed for inspection of pipes ranging from 100 mm (internal diameter) to 250 mm (internal diameter). The robot is driven by three chained wheel mechanisms each of them separated by 120 degrees. The mechanism allows the autonomous movement of the robot and hence saves time. It has night vision camera enabled mode for image processing to study the corrosion rate of the pipe surface as well as the condition of the pipe inner surface. The kinematic model of the bot is modelled in SolidWorks and the prototype is developed. The performance of the robot is verified both by stimulation and experimentally.

Keyword: Pipe inspection robot, Pantograph Linkage System, Edge Detection and Feature Extraction.

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Recommendation System Using Machine Learning

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Abstract— Due to increase of data on internet ,there is an increased dependency on internet by people Thus, recommendation systems help people by suggesting products where is overload of information on ecommerce websites. There are various methods for recommendation. This paper study about various techniques used in designing of recommendation system with machine learning algorithm.

Keywords— Content filtering, Collaborative Filtering, Naïve Bayes, KNN clustering.

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Lung Tomography Using Convolutional Neural Networks

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Abstract— with the new decade, new era of technology would begin and with that, would begin the revolution in the processing of data. As years pass by, newer cases of tumours are Detected and curing them would be easier at the initial stages. Applying artificial Intelligence on CT scans would detect anomalies using features of lung tumour based on data collected of over thousand patients and a solution is brought forward using techniques of neural networks to determine exact deformity zones in the scanned images. This method is an aid to the doctors mostly in the scenarios where the tumour patches can be neglected when seen by naked eye. Incorporation of Static filtering and AI classifier will ensure elite level of detection. The computation as visual aid can be incorporated along with practical deployment which makes hardware compact and efficient.

Keywords— artificial intelligence, neural networks, image processing, static filtering, AI classifier.

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Automated skin cancer detection Web-based application and review of some image classification algorithm

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Abstract-- Skin cancer is one among the most prevalent forms of cancer, according to the recent statistics 2 to 3 million people suffer from non-melanoma skin cancer and approximately 1, 32000 numbers of people suffer from melanoma cancer worldwide each year. To increase the survival rate, early-stage detection and prevention of life-threatening skin cancer is vital. In this paper, we review recent literature on usability of various deep learning technologies for the purpose of detecting skin cancer at an early stage. The advance deep learning approaches provide effective models to increase accuracy and efficiency of computerized analysis of the skin lesions. We also propose a web application for automated skin cancer detection using transfer learning method.

Keywords- deep learning; convolutional neural networks; skin Cancer; image processing; transfer learning.

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A Novel Framework for Energy Efficient Billing of Agricultural Appliances using the Internet of Things

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Abstract— The progress in technology is a non-stop process. The same is applicable for the domains of electrical distribution, maintenance and measurement as well. In our project, we intended to design a wireless meter reading system for efficient billing in agricultural households. The system will continuously monitor the meter reading and control the electric load as per requirement for a typical agricultural set-up. Smart energy meter will avoid human intervention, billing error, provide efficient meter reading and reduce maintenance cost. The meter can display information on LCD display or upload the same on cloud. This data can later be accessed by the power utility unit or the user. In this project, we intend to develop a system with ESP WROOM-32 micro-controller to monitor energy meter which can calculate load consumption of individual loads in an agricultural set-up. The energy expenditures thus can be monitored by increasing the possibility of reduced consumption through data analyzed from energy meter.

Keywords—Internet of Things (IOT), Smart Energy Meter, ESP-32 WROOM-32 Microcontroller.

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Communication and Cost-Efficient Third-Party Auditor over Public Cloud

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Abstract-The integrity of data and efficiency of storage are the most important concerns in cloud computing. Signature generation and validation of signature are the methods to prove the integrity of data over the cloud. In addition, a third-party auditor (TPA) helps in validating the signature. Proposed auditing system helps in improving storage efficiency and remove duplication on the cloud server. The proposed scheme is efficient as communication is based on the need for integrity checking. The computational cost is calculated at the user side. Batch auditing is implemented in the scheme and it also supports the dynamic auditing. Results are analyzed and compared with some of the existing systems.

Keywords- Cloud Computing, Cloud service user, Third Party auditor, Storage security, Communication efficiency.

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Simulation of Ultrasound Wave Propagation Through Metals using MATLAB and k-Wave

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Abstract— Nondestructive Testing (NDT) covers major a part in the testing of metallic products in the industry. The popular and state of art techniques like X-Ray based testing are costly, bulky and involves ionized radiations which vital for human beings working around. The ultrasound-based testing techniques have evolved as a low-cost alternative to these issues. This paper studies propagation of ultrasound waves propagation through various metals. The simulation is performed for various operating conditions using the k-Wave toolbox in MATLAB.

Keywords— NDT, k-Wave, Metal Density, Broadband Ultrasound Attenuation (BUA), Speed of Sound (SOS), Pulse-Echo, Propagation Parameters

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Check De-duplication on Dependable Data Outsourcing with Three Error Detecting Techniques on Cloud Computing

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Abstract— Recently cloud computing is usually a la mode. Cloud services that provide knowledge outsourcing on a cloud, numbers of users access these services to store an oversized quantity of data on the cloud. Several existing systems have limitations i.e. loss of availability, loss, and corruption of data loss of privacy, and merchandiser lock-in. Existing DEPSKY overcome these limitations however it lacks an error detection mechanism and comes with serious computing prices. To beat this downside I propose a singular economical De-duplication on Dependable Encrypted knowledge Outsourcing on Cloud With quick Recovery. My main goal is to urge obviate perennial files on the cloud therefore whenever a user uploads any file 1st checking de-duplication subsequently the three error detection ways verify files shadows area unit hacked or not efficiently , Finally quick recovery technique recovers files quicker than existing ways. My novel satisfies all elementary security needs further as perform above existing schemes.

Keywords- Cloud Computing, Data Outsourcing, Dependable System, De-duplication
