

AICTE Sponsored International Conference on Artificial Intelligence and Machine Learning
IAIM-2022 (27th to 29th January, 2022)

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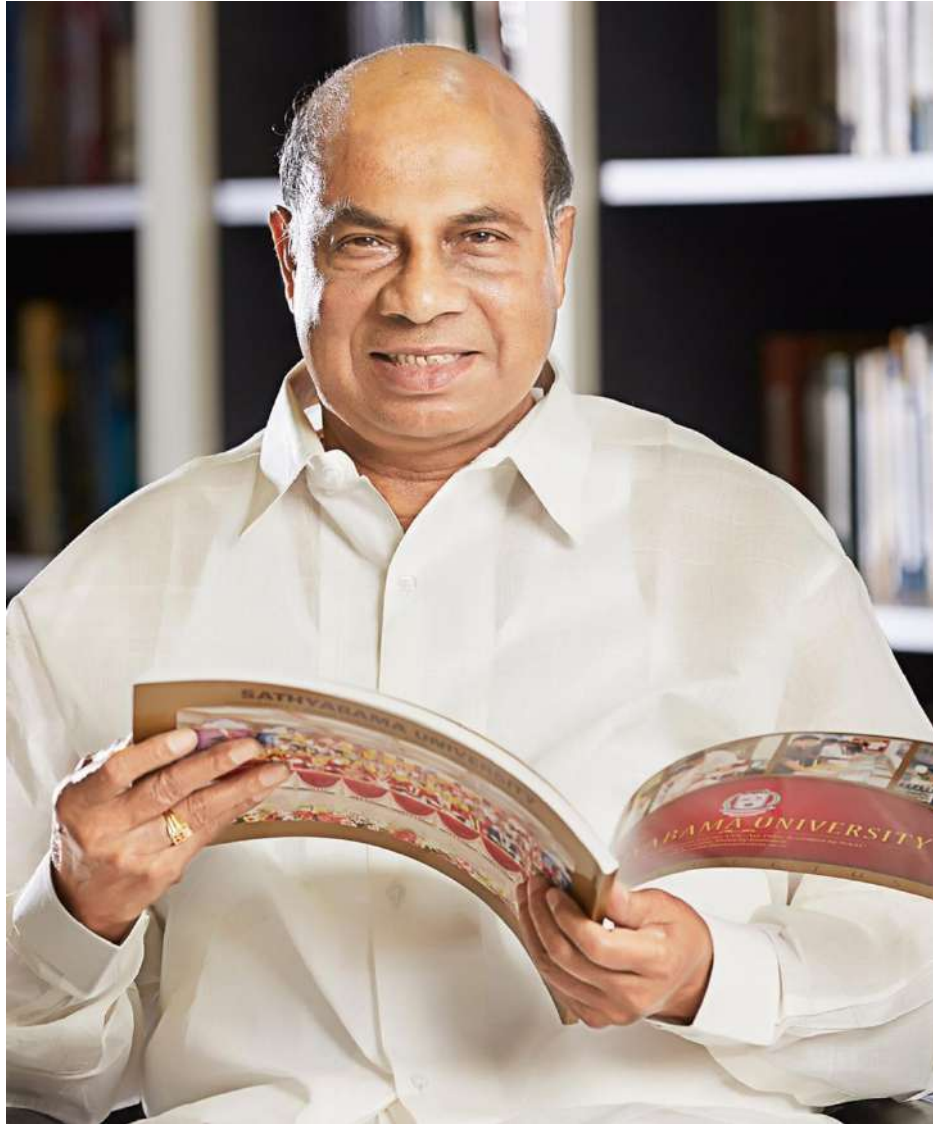
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AICTE Sponsored International Conference on Artificial Intelligence and Machine Learning
IAIM-2022 (27th to 29th January, 2022)

**WITH THE BLESSINGS OF
FOUNDER CHANCELLOR**

Colonel. Dr. JEPPIAAR M.A., B.L., Ph.D.



Department of Information Technology
School of Computing
Presents

**AICTE Sponsored International Conference on
Artificial Intelligence and Machine Learning
- IAIM-2022**

CHANCELLOR'S AND PRESIDENT DESK



MESSAGE

We are extremely happy to note that the Department of Information Technology, School of Computing of Sathyabama Institute of Science and Technology is organizing an AICTE Sponsored International Conference on Artificial Intelligence and Machine Learning (IAIM-2022) on 27th to 29th January 2022. The purpose of this International conference is to promote research in all areas of Artificial Intelligence (AI) and Machine Learning, covering both theoretical/foundational issues and applications, and the exchange of ideas/insights among researchers, engineers and practitioners in related disciplines. We are sure that this International conference will provide a unique opportunity for the research scholar, academician, industrialist, researcher and expert to contribute as well as to learn the advancements in the field of Artificial Intelligence and Machine Learning. We congratulate the Department of Information Technology on their effort and wish the conference a grand success.

Dr. MARIAZEENA JOHNSON

Chancellor

Dr. MARIE JOHNSON

President

VICE PRESIDENT'S DESK

MESSAGE

It is a matter of pride to pen down the message for the AICTE Sponsored International Conference on Artificial Intelligence and Machine Learning (IAIM-2022) of Department of Information Technology, School of computing, Sathyabama Institute of Science and Technology. We are confident that this Conference has the potential to create a platform for all Research Scholars, Academician, Industrialist and Students to express their creative pursuit in the area of Artificial Intelligence and Machine Learning. We wish the Conference a Grand Success.

Mr. J ARUL SELVAN

Vice President

Sathyabama Institute of Science and Technology

Ms. MARIA BERNADETTE TAMILARASI

Vice President

Sathyabama Institute of Science and Technology

VICE CHANCELLOR'S DESK

MESSAGE

I welcome all delegates to the AICTE Sponsored International conference on Artificial Intelligence and Machine Learning (IAIM-2022). Transformation of an idea to a research plan and execution to develop that into a product in the field of Artificial Intelligence and Machine Learning is a challenge. The conference theme involves Artificial Intelligence Tools and Applications, Multimedia & Cognitive Informatics Pattern Recognition and Machine Learning, Ethics in Information System, Data Analytics & Business Intelligence and Smart Systems Development. The IAIM Conference is where cutting-edge science meets new business implementation. It's a deep dive into emerging Artificial Intelligence techniques and technologies with a focus on how to use them in real-world implementations. The conference will be focusing on the current emerging scenario and will be providing an excellent platform for discussion across various disciplines on the most exciting and fast expanding areas of Artificial Intelligence and Machine Learning and its applications. This would help in the evolution of inter-disciplinary and interinstitutional programs through exchange of innovation ideas and knowledge base. I wish all the participants very fruitful deliberations during the conference and wish IAIM-2022 all success.

Dr. T. SASIPRABA

Vice Chancellor

Sathyabama Institute of Science and Technology

REGISTRAR'S DESK

MESSAGE

I am immensely happy to write these words from my desk for those who organize AICTE Sponsored International conference on Artificial Intelligence and Machine Learning (IAIM-2022) another big success on 27th to 29th January 2022. It is important for any organization to be updated with the latest trends in their fields. The Artificial Intelligence and Machine Learning Conference has been designed to help business and technology executives cut through the hype and learn how intelligent technologies are being successfully deployed to build competitive advantage, drive new business opportunities, reduce costs and accelerate innovation efforts. I am sure this conference would be covering all important accomplishments in the last decade and honour the feats accomplished by the researchers, scientist and academicians in the field of Artificial Intelligence and Machine Learning. I would like to convey my best wishes to the organizing committee and delegates for the success of the conference and their future endeavours.

Dr. S S RAU

Registrar

Sathyabama Institute of Science and Technology

CONTROLLER OF EXAMINATIONS
MESSAGE

It's quite rewarding to note that the AICTE Sponsored International conference on Artificial Intelligence and Machine Learning (IAIM-2022) is being organized by Department of Information Technology, School of Computing on 27th to 29th January 2022. Implementation of ideas gives newer version of products. I hope this conference (IAIM-2022) provides an apt platform to think about real world problems, new innovative ideas and also to share the implementation of ideas. I wish the efforts put by the Department of Information Technology, and other organizing committee members will provide the necessary impetus for research in newer ideas and directions to many young students interested in pursuing career in Artificial Intelligence and Machine Learning and its applications.

Dr. S. IGNI SABASTI PRABU

Controller of Examinations

Sathyabama Institute of Science and Technology

PREFACE

On behalf of the IAIM-2022 organizing committee, I would like to welcome the speakers and participants to the AICTE Sponsored International Conference on “AICTE sponsored International Conference on Artificial Intelligence and Machine Learning (IAIM-2022)” in association with IEI. We have received around 210 papers from various countries like UK, Malaysia and India. In India level we have received abstracts from IITs, IIITs, NITs, ISRO, State Universities, Central Universities, Public Sector Undertakings and IT industries. The proceedings include the short-listed abstracts around 50 papers. Over three days of the conference the presentations were distributed over 9 sessions. The credit for the quality of the conference goes first and foremost to the dedicated professors and eminent speakers from various countries and different organizations in India like IITs, NITs, ISRO and Industries. We have arranged oral presentations and zoom presentations in various venues.

I would like to express our deep gratitude to the management of Sathyabama Institute of Science and Technology, especially our Honourable Founder Chancellor Col. Dr. JEPPIAAR, Chancellor Dr. MARIAZEENA JOHNSON, President Dr. MARIE JOHNSON for providing the great opportunity and utmost support to conduct IAIM-2022. I congratulate the organizing committee on their efforts and wish them very best. IAIM-2022 has a very important role to play in the process of streamlining and to interpret emerging theories and models in the technological field. IAIM-2022 is aimed at providing an opportunity to the participants to reinforce their expertise through invited talks by renowned speakers who are highly experienced in Artificial Intelligence and Machine Learning. I cordially welcome the speakers, delegates, professors, scientist and students to the interactive forms and thereby make the conference a grand success.

Organizing Secretary

Dr. T. SASIKALA

AICTE Sponsored International Conference on Artificial Intelligence and Machine Learning
IAIM-2022 (27th to 29th January, 2022)

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- **Dr. S. Hariharan,**
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- **Dr. S. Karthikeyan,**
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INVITED TALKS



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Programme Director: Electrical and Electronic Engineering
Faculty of Innovation & Technology
Taylor's University, Malaysia



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Founder & Chairman- Albert Einstein Engineering
and Research Labs
Vice Chairman- Renewable Energy Society of India (RESI)
Coimbatore.



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Assistant Professor
Department of IT, MIT Campus
Anna University, Chennai.



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Technical Lead
Bank of America
AI Research & Development
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Dept of CSE

National Institute of Technology Puducherry
Puducherry



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Professor, Dept. of Civil Engineering

Associate Faculty, Centre for Earth Sciences (CEaS)

Associate Faculty, Interdisciplinary Centre for Water
Research (ICWaR)

Associate Faculty, Divecha Centre for Climate Change
(DCCC)

Indian Institute of Science, Bangalore



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R&D Head

SolvEdge Technologies

Chennai



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Ph.D., MCSFS, FHEA, FBCS, (UK)

Senior Lecturer and Course Leader, MSc Engineering
Management

Academic Lead, C & T/SST, International Teaching and
Research Collaboration

Nottingham Trent University, United Kingdom

Data science & Artificial intelligence opportunities and
challenges



SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF INFORMATION TECHNOLOGY, SCHOOL OF COMPUTING

PROGRAMME SCHEDULE

AICTE SPONSORED INTERNATIONAL CONFERENCE ON ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING (IAIM-2022)

27TH January 2022, THURSDAY (DAY-1)

Inaugural Function (Presentation Hall - IRC)
10.00 AM – 11.15 AM

Plenary Session - 11.30 AM- 1.00 PM

WELCOME ADDRESS

CONFERENCE HIGHLIGHTS

INAUGURAL ADDRESS

PRESIDENTIAL ADDRESS

KEYNOTE ADDRESS 1

KEYNOTE ADDRESS 2

PLENARY TALK 1

PLENARY TALK 2

Dr. T. Sasikala,
Dean,
School of Computing
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Vice President,
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Science and Technology

**Ms. Maria Bernadette
Tamilarasi Johnson,**
Vice President,
Sathyabama Institute of
Science and Technology

Mr. K N Visveswaran,
Chief Mentor,
Hexaware
Technologies Limited,
Chennai

Dr. Sanjay Tyagi,
Director,
Software Technology
Parks of India, Chennai

TEA BREAK
11.15 - 11:30 AM

**Dr. Chockalingam Aravind
Vaithilingam,**
Programme Director,
Electrical and Electronic
Engineering, Taylor's
University, Malaysia

Dr. Joshua Thomas
Associate professor,
Department of Computing
UOW Malaysia,
KDU Penang University
College.

LUNCH: 1.00 PM - 1.30 PM

ORAL SESSIONS: 1.30 PM - 3.00 PM

Venue: 1

Venue: 2

Oral Session – 1

Oral Session – 2

Invited Talk & Session Chair: Dr. R Swarnalatha
Assistant Professor, Department of EEE
Birla Institute of Technology & Science, Pilani Dubai, UAE

Invited Talk & Session Chair: Dr. Noor Zaman
Associate Professor
School of Computer Science and Engineering,
Director for the research excellence centre Taylor's University, Malaysia

Session Chair: Dr. Joshua Thomas
Associate Professor,
Department of Computing,
UOW Malaysia, KDU Penang University College.

Session Chair: Dr. S Balamurugan
Founder & Chairman
- Albert Einstein Engineering and Research Labs Vice Chairman
- Renewable Energy Society of India (RESI), Coimbatore.

Participant paper presentations

Participant paper presentations

Venue 3 - Presentation Hall, IRC – I floor

Oral Session- 3

Invited Talk & Session Chair:

Dr. Nagarajan,
Research Head, Solve Edge Technologies, Chennai.

Dr. G. Mathivanan,
Professor, School of Computing, Sathyabama Institute of Science and Technology.

Participant paper presentations:



SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF INFORMATION TECHNOLOGY, SCHOOL OF COMPUTING

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AICTE SPONSORED INTERNATIONAL CONFERENCE ON ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING (IAIM-2022)

28TH JANUARY 2022, FRIDAY (DAY-2)- PLENARY SESSION – 9.00 AM-10.30 AM

<p>Plenary Talk 1 Dr. D Nagesh Kumar Professor, Dept. of Civil Engineering Associate Faculty, Centre for Earth Sciences (CEaS) Indian Institute of Science, Bangalore</p>	<p>Plenary Talk 2 Dr. Funminiyi Olajide, Ph.D., MCSFS, FBCS, FHEA., Senior Lecturer in Information Security and Computer Forensics Course Manager, MSc Engineering Management, Dept. of CS, SST, Academic Lead for NTU, United Kingdom.</p>
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TEA BREAK (10.30-10.45 AM)

ORAL SESSIONS: 10.45 AM- 01.00 PM

Venue: 1	Venue: 2
<p>Oral Session – 4 Invited Talk & Session Chair: Dr. Ahmed A. Elngar Assistant Professor, Faculty of Computers & Artificial Intelligence Beni - Suef University, Egypt</p> <p>Session Chair: Dr. L. Ramanathan Associate Professor, School of CSE, VIT Vellore. Tamil Nadu.</p> <p>Participant paper presentations</p>	<p>Oral Session – 5 Invited Talk & Session Chair: Dr. Nagesh Kumar Professor, Dept. of Civil Engineering, Associate Faculty, Centre for Earth Sciences (CEaS), Associate Faculty, Interdisciplinary Centre for Water Research (ICWaR) Associate Faculty, Divecha Centre for Climate Change (DCCC) Indian Institute of Science, Bangalore</p> <p>Session Chair: Dr. K. Marimuthu Professor SRM University, Delhi, India.</p> <p>Participant paper presentations</p>

LUNCH (01:00 PM – 1.30 PM)

ORAL SESSIONS: 1.30- 3.00 PM

Venue: 1	Venue: 2
<p>Oral Session – 6 Invited Talk & Session Chair: Mr. Madhavan Elango Board Member, Agile Consortium Belgium, Agile Coach, KBC Group, Belgium.</p> <p>Session Chair: Dr. Angelina Geetha Professor, Department of Computer Science and Engineering, Hindustan Institute of Science and Technology, Chennai</p> <p>Participant paper presentations</p>	<p>Oral Session – 7 Invited Talk & Session Chair: Mr. Jai Ganesh Suresh Technical Lead, Bank of America, AI Research & Development Chennai.</p> <p>Session Chair: Dr. V. D. Ambeth Kumar, Professor, Computer Science and Engineering Panimalar Engineering College, Chennai</p> <p>Participant paper presentations</p>



SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF INFORMATION TECHNOLOGY, SCHOOL OF COMPUTING

PROGRAMME SCHEDULE

AICTE SPONSORED INTERNATIONAL CONFERENCE ON ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING (IAIM-2022)

29TH JANUARY 2022, SATURDAY (DAY-3)

PLENARY SESSION - (9.00 AM - 10.00 AM)

Plenary Address 1: Dr. G Rajesh

Assistant Professor Department of IT, MIT Campus, Anna
University, Chennai.

TEA BREAK (10.00 AM- 10.15 AM)

ORAL SESSIONS: 10.15 AM- 01.00 PM

Venue: 1

Oral Session – 8

Invited Talk: Dr. B Surendiran

Assistant Professor, Dept of CSE,
National Institute of Technology Puducherry.

Session Chair: Dr. Suji Helen

Associate Professor, Dept of CSE,
Sathyabama Institute of Science and Technology

Participant paper presentations

Venue: 2

Oral Session – 9

Invited Talk: Mr. G. R. Samuel Jebasingh

Senior Solution Architect,
HCL Technologies Ltd, Chennai.

Session Chair: Dr. P. Asha

Associate Professor, Dept of CSE,
Sathyabama Institute of Science and Technology

Participant paper presentations

LUNCH (01:00 PM – 1.30 PM)

VALEDICTORY FUNCTION AND AWARD CEREMONY

Venue: Presentation Hall, IRC – I floor Time: 1.30 PM- 3.00 PM

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ARTIFICIAL INTELLIGENCE



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Outstanding Associate Editor IEEE Access Journal

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AI is a general-purpose technology that can forecast and automate pre-defined sets of tasks by analysing and, in certain cases, producing data about the work at hand. The fast acceptance of humanoids and AI-enabled home companions has sparked fears about how technology could someday supplant human contact. Between internet and physical space, Society 5.0 reaches a high degree of convergence. This process provides fresh value to industry and society in previously unimaginable ways. We extract and componentize the functions of various network devices, as well as some functions of old and new systems, to speed the realisation of the "Super Smart Society (Society 5.0)" through IoT.

**RECOGNIZING AND PREDICTING MULTIDOMAIN PARALLEL INPUTS FOR
DEEP LEARNING ALGORITHMS**



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Nowadays, research and development on deep learning applications have been intensively and comprehensively pursued worldwide in proportion to the breakthrough in the field of artificial intelligence. The present invention relates to the implementation of core parallel architecture in a deep learning algorithm. At present, deep learning technology forms the main interdisciplinary basis of healthcare, hospital hygiene, biological and medicine. This work establishes a baseline range by training hyperparameter space, which could support images, and sound with further development of a parallel architectural model using multiple inputs with and without the patient's involvement. The CXR images input could form the model architecture and include variables for the number of nodes in each layer and dropout rate. Fourier transformation Mel-spectrogram images with the correct pixel range are used to convert sound acceptance at the convolutional neural network in embarrassingly parallel sequences. For the convenience of the end-users, simple user interfaces provide the user with three options whereby they can diagnose COVID-19 with both CXR Image and a Cough Audio file or diagnose with either one of them. Based on the model's performance summary the COVID-19 CXR Model has an accuracy of 95%, the non-COVID-19 Pneumonia CXR Model has an accuracy of 91% and the Cough Mel-Spectrogram Model has an accuracy of 91%. Effects of parallel architecture and optimization to improve on design were investigated.

WHY DID DINOSAURS BECOME EXTINCT?: AGILE MINDSET FOR THE MODERN WORLD



Mr. Madhavan Elango

Agile Coach - Trainer at KBC Group N V

Board Member ACB

Author | Speaker

This session helps to understand the Philosophy of Agile and how to cultivate Agile mindset, which is essential to succeed in the modern world. IT is not down, but learning new skills like Artificial Intelligence / Data Science is crucial to survive and to succeed. Agile software development is more than frameworks such as Scrum, Extreme Programming, or Feature-Driven Development (FDD). Agile software development is more than practices such as pair programming, test-driven development, stand-ups, planning sessions, and sprints. Agile software development is an umbrella term for a set of frameworks and practices based on the values and principles expressed in the Manifesto for Agile Software Development and the 12 Principles behind it. When you approach software development in a particular manner, it's generally good to live by these values and principles and use them to help figure out the right things to do given your particular context.

**EVOLUTION OF SOFT COMPUTING SYSTEMS FROM CONVENTIONAL
CONTROL SYSTEMS**



Dr R Swarnalatha,

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Bits Pilani, Dubai Campus. Dubai.

- The speaker will cover the history of control system methodologies from conventional controls to soft computing controls.
- Each stage of controls will be highlighted with its advantages and disadvantages.
- During the presentation the artificial Intelligent techniques will be discussed in detail.
- Application of artificial Intelligence in Biomedical instrumentation will be the focus of this presentation.

INTEGRATED INTELLIGENT INTERNET OF THINGS: CHALLENGES AND OPPORTUNITIES



Assoc. Prof. Ts. Dr. Chockalingam Aravind Vaithilingam

Taylor's University Malaysia

As technological growth is rapid in the past two decades the blending of the three components are the biggest challenges in front of us. Bridging or adopting the Evolution of Technology, Interconnecting existing and new Devices through Technology and Data Evolutions addressing the Volume, Variety, Velocity, Value, Veracity.

The automation revolution technically coined as Industry 4.0 is where the machines largely govern themselves, through networking of things attached to it. The data sharing capability of the interconnected things is supported using data storage in hyperspace and handling it become the key attributes of this revolution. The placing of the industry 5.0 into the industry is not so far and no need to wait for another decade but within the next few years and some of them are already players in it. With the parallel capabilities of hyperspace of the devices, the control of the cyber physical systems and human “dry writing” intelligence of the computers an exponential growth is within the visible range. These presentations will explore large scale M2M on communication and IoT deployment and new levels of analysis embedded self-diagnosis outlined with a number of examples both real world and lab scaled innovation in the control and energy sector.

**SMART HEALTHCARE SYSTEM WITH SPECIAL FOCUS ON COVID-19
PANDEMIC**



Dr. S. Balamurugan

SMIEEE,

ACM Distinguished Speaker,

Director - Albert Einstein Engineering and Research Labs (AEER Labs) &

Vice Chairman- Renewable Energy Society of India (RESI), India

Smart Healthcare System with Special Focus on COVID-19 Pandemic deals with Personal Health Records (PHRs). It should remain the long-term property of patient's data. MyPHR Machines a patient centric system that takes a radically new architectural solution to health record interoperability. Patients Can View their Medical data and they can access and share through remote Virtual machine. Multi authority-based encryption with My PHR system (MA-My PHR) -to solve the Key generation issues. The Advantages are no need to carry the medical records.

For example, ready access to information about patient's drug allergies and current medications enables doctors to prescribe medication accurately and reduces unnecessary side effects. To reduce the cost for patients as doctors can view the results of any medical test in online. This eliminates the need for repeated tests.

APPLICATION OF MACHINE LEARNING



Dr. G. Rajesh

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Anna University

Application of machine learning for communication networks A technical introduction to the basics of supervised and unsupervised learning in machine learning followed by the exemplifying applications to communication networks will be discussed by distinguishing tasks carried out at the cloud, intermediate routers and edge node of the network at different layers of the protocol stack, with an emphasis on the physical layer of the open system interconnection model. The presentation also focuses on the difference between conventional model and machine learning approach of solving the communication network problems. The high-level presentation on data available at the edge segment of a communication network like Location, traffic loads across services, users' device types, battery levels, Throughput, FER, random access load latency, Baseband signals and channel state information. Also, the cloud level data like Mobility patterns, network-wide traffic statistics, outage rates, User's behaviour patterns, subscription information, service usage statistics and TCP/IP traffic statistics are discussed with research focus.

A BIRD VIEW ABOUT THE ARTIFICIAL INTELLIGENCE WITH ANALYZING TECHNIQUES OF DEEP LEARNING



Jai Ganesh S,
Technical Lead, Bank of America.

AI is revolutionizing the way we live and get things done. It learns, reasons and does self-correction. Since it has become a master with its applications, we, in this article will understand that how it is advancing dramatically.

Starting with the identifying pattern, it has made data more efficient. In today's time, to gain more insight out of the data, businesses have changed a lot in the course of time. Humongous data is getting analysed to map poverty and climate change.

The automation in agricultural practices and irrigation is happening at a fast pace. This intelligence is the simulation of human intelligence processes which is done by machines, especially computer systems.

These processes include learning, reasoning, and self-correction. Its applications consist of expert systems, speech recognition, and machine vision. Artificial Intelligence is advancing dramatically. It is already transforming our world socially, economically and politically.

AI FOR HEALTHCARE



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AI in healthcare is an umbrella term to describe the application of machine learning (ML) algorithms and other cognitive technologies in medical settings. In the simplest sense, AI is when computers and other machines mimic human cognition, and are capable of learning, thinking, and making decisions or taking actions. AI in healthcare, then, is the use of machines to analyse and act on medical data, usually with the goal of predicting a particular outcome.

A significant AI use case in healthcare is the use of ML and other cognitive disciplines for medical diagnosis purposes. Using patient data and other information, AI can help doctors and medical providers deliver more accurate diagnoses and treatment plans. Also, AI can help make healthcare more predictive and proactive by analysing big data to develop improved preventive care recommendations for patients.

**EVOLUTIONARY ALGORITHMS FOR MULTI OBJECTIVE OPTIMIZATION IN
WATER RESOURCES MANAGEMENT**



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In the recent past, computational algorithms inspired by biological processes and evolution are gaining popularity for solving science and engineering problems. These algorithms are broadly classified into evolutionary computation and swarm intelligence algorithms, which are derived based on the analogy of natural evolution and biological activities. These include genetic algorithms, evolutionary programming, particle swarm optimization, ant colony optimization, artificial neural networks, and other algorithms. These algorithms being random search techniques use some heuristics to guide the search towards optimal solution and speed-up the convergence to obtain the global optimal solutions. The bio-inspired methods have several attractive features and advantages as compared to conventional optimization solvers. They also facilitate the advantage of simulation and optimization (both can be done simultaneously) to solve hard to define (in simple expressions) real world problems. These biologically inspired methods have provided novel way of problem-solving for practical problems in various fields of engineering including water resources management. In this presentation, key features and development of some of the bio-inspired computational algorithms, and their scope for application in optimal water resources management in the multi objective context will be discussed.

DEVELOPING ENTERPRISE CHATBOTS



E. Nagarajan

R&D Head,

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Dialogue system, conversational agents, chatbots, personal assistants and voice-control robots are becoming increasingly popular and ubiquitous in the modern world. Examples of these include personal assistants on mobile devices, customer service in call centres, as well as online chatbots selling products and services. However, building intelligent conversational agents remains a major unsolved problem in artificial intelligence research.

Chatbots Architecture:

Building a chatbot for commercial use via data-driven methods poses two main challenges. First is broad-coverage: modelling natural conversation in an unrestricted number of topics is still an open problem as shown by the current concentration of research on dialogues in restricted domains. Second is the difficulty to get a clean, systematic, unbiased and comprehensive datasets of open-ended and task-oriented conversations, which makes it difficult for chatbot improvement and limits the viability of using purely data-driven methods such as neural networks. Deep learning and machine learning algorithms such as Accuracy vs Explainability and Explainable vs Unexplainable Learning.

**DEVELOPING METHODOLOGY APPROACH FOR SCADA FORENSICS AND
PROCESS FOR INCIDENT RESPONSE OF CNI**



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As Digital Technology is increasing, there is need for a sophisticated toolkits development for SCADA Forensic Incident Response (SFIR). SCADA is the term used as Supervisory Control and Data Acquisition (SCADA) systems in different Critical National Infrastructure (CNI) and these includes Electric Power, Oil & Gas, Manufacturing, Utility, Transportation services and others. Digital Society and at the pace at which technology are advancing, cyber threats are enormous and therefore, maintenance of SCADA cycle against cyberattack on CNI has become an important area for research innovation and development. The methodology approach for SCADA Forensics Incident Response (SFIR) and 'ICS Forensic Toolbag' research is evaluated on the need for rapid response of cyber incident. This is underpinning the control systems and as identified on characteristics of real time scenario for CNI critical safety. As various demanding, a Case study of an infected malware of digital device will be presented and as related to the forensics artifacts, for data and enterprise security of IT/IS infrastructures, in a secure operating systems environment.

MULTI-CLASS LABEL CLASSIFICATION OF EXTREMIST TWEETS

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Extremists use tweets for group strengthening, propaganda, brainwashing and fundraising by reaching people's mind. A tweet is a post of utmost 280 characters on Tweeter, a popular micro blogging service. Our objective is to identify extremist affiliation based on opinions expressed on tweets, in order to prevent brainwashing on public and trace terrorist activities. To overcome these issues, sentiment analysis with an automated process of understanding an opinion on given subject from written or spoken language is adapted. Traditional methods of filtering are not scalable for classifying extremist and non-extremist tweets. Overcoming conventional approach, machine learning based classification system applied to this problem, was still limited to unrigorous and vast categorization of tweets into positive and negative. Another restriction was the negligence of overall dependency related to sentences. This paper, therefore aims at distinguishing tweets as extremist and non-extremist and also investigating other types of extremism by employing Deep Learning and machine learning methods.

5TH GENERATION OF GENERALIZED FREQUENCY DIVISION MULTIPLEXING

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GFDM (Generalized Frequency Division Multiplexing) is fifth generation wireless communication network and 5G based on multi branch multicarrier bank. GFDM is a non-orthogonal and circular pulse shaped waveform using channel condition for performance analysis. This paper presents a review of different method for generalized frequency division multiplexing to calculate various parameter in based on 5th generation of wireless communication system space diversity and different error correcting code, determine the various parameter and different bandwidth.

CLUSTERING TECHNIQUES FOR ENHANCING SUPERVISED CLASSIFIERS IN ANOMALY DETECTION

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Machine learning is a vast field and its algorithms has a huge application on manufacturing industries particularly anomaly detection. Classification and Prediction of the data given with high accuracy score depends upon the machine learning model that is been trained. Wafer dataset, which is been sourced at Kaggle is been used as the dataset. In this paper, the efficiency of K-Means algorithm & Fuzzy C Means algorithm as feature grouping method is tested to enhance the accuracy three different supervised models namely Random Forest, Decision Trees and K Nearest Neighbor classifiers. In feature clustering technique, the centroids of the clustering algorithm will be given as input to the supervised classifiers instead of giving the direct features. For this wafer anomaly detection dataset, the K means algorithm performs well as feature selection method when compared to Fuzzy C Means algorithm and it helps the K Nearest Neighbor classifiers to attain the accuracy of 91.38%.

DIGITAL IMAGE RECONSTRUCTION OF GENERATIVE ADVERSARIAL NETWORK (GAN) WITH EDGECONNECT(EC) INPAINTING ALGORITHM

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Entirely prevailing image inpainting procedures built on neural network models that are affected by physical alterations and blurry consistencies on a visible connectivity, such that overfitting and overlearning spectacles can simply appear in the image inpainting dealing out the process. This paper aims to fills missing parts of a scratched or damaged an image with a generative adversarial network (GAN). This model plays an important role in image inpainting. We propose two-stage model that divorces the inpainting problem into structure prediction and an image accomplishment. This model initial predicts the image structure of the missing area in the form of edge maps. A GAN aims estimating whether the repair area is accurate. We present a generative adversarial network (GAN) system to completes images with an Edge connected inpainting algorithm. The edge producer consumes images edges of the both regular and irregular missing region of the image, and the image completion network fills in the missing areas by hallucinated boundaries as a prior. Here proposed an algorithm for eliminating target objects from digital images. This technique presented for correctly building with the from an evolution of pictures. That is our future model can deal with large-scale missing pixels, and produce accurate results.

PATIENT SPECIFIC TUMOR DETECTION USING 3D CONVOLUTIONAL NEURAL NETWORK

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Tumor detection and classification plays a crucial role in medical applications. Magnetic Resonance Imaging is the powerful scan of brain tumor. Segmentation and classification of tumor is done in Magnetic Resonance Imaging (MRI). The MRI of a single patient consists of 4 images of three-dimensional sizes. All the 4 images are integrated to form a single three-dimensional image. In the integrated image, the tumor portion is segmented using Grab Cut method. Then features are extracted using 3-Dimensional Convolutional Neural Network (3D CNN) which is specially designed for this research. The deep features thus extracted are classified using multiple classifiers. The proposed method is tested on BRATS 2017 and 2018 challenging datasets. The results are compared with more recent methods.

**A COMPREHENSIVE STUDY ON VARIOUS PREPROCESSING TECHNIQUES
FOR BRAIN MRI IMAGE**

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Nowadays, MRI images of the brain are extremely useful in the medical field for diagnosing various diseases and injuries related to the brain. Using magnetic fields and radio waves, magnetic resonance imaging (MRI) of the brain creates high-quality two-dimensional or three-dimensional images of the brain and brain stem. In medical image analysis, it is necessary to perform image preprocessing steps to prepare the image for segmentation and classification. It helps to increase the quality of the image by eliminating the noise effects. This paper focused on a review of various preprocessing methods used in brain MRI images.

SMART VIRTUAL DRESSING ROOM

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“Virtual Dressing Room” is designed on the concepts of Virtual reality and is one of the most interesting aspects of online or e-shopping. In recent time VR/AR has become more prevalent and their capabilities will continuously emerge in the coming years. VR/AR technology plays a major role in consumer’s purchasing decisions by providing them with greater satisfaction with the help of a virtual trial room experience on their PC, mobile devices. The basic idea behind this research is to detect the user’s face from the live video stream through webcam and important human’s body landmark using appropriate algorithms and try to superimpose the selected items which might be clothes, earrings, goggles, and so on the detected body parts. The aim of a project is to implement an application with a user interface is used to check different types of clothes and other accessories on the user. The user interface allows the user to choose and purchase a dress and fashion kit. Alignment of the user standing in front of the camera with the selected items with proper positioning and scaling is the major issue faced here. Python is used for implementing this project because it has an abundance of in-built features and also it has huge active community support.

SECURITY ISSUES IN INTRUSION DETECTION – REVIEW

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Network information security is what computer network security is all about. It alludes to the organizational framework that we utilize to shield data stream and information from coincidental harm, spills, and different issues. The privacy, truth, correctness, and safety of computer networks are all directly related to network security. Due to a variety of security threats and hazards, an organization's critical data is at risk. Intrusion is one sort of risk that involves attempting to circumvent the computer system's normal security safeguards. ID is a means of identifying security breaches in a computer network by checking and evaluating the activities that are issued. IDS play a critical role in ensuring the security of a network. This paper gives a broad overview of computer network security and intrusion detection systems, allowing anyone who reads it to get a basic understanding. This paper also provides a basic overview of network security and intrusion detection system assaults.

AN APPROACH TOWARDS VIDEO CAPTIONING IN BENGALI

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Video captioning refers to the process of predicting a semantically consistent textual description from a given video clip. Although significant research work can be found on video captioning in English, for Bengali the field of video captioning is nearly unexplored. Therefore, this research aims at generating Bengali captions that plausibly describe the gist of a specific short video. To accomplish this, Long Short-Term Memory (LSTM) based a sequence-to-sequence model is used that takes the video frame features as input and provides a corresponding textual description as output. In this study Microsoft Research Video Description Corpus (MSVD) dataset is used which is an English dataset. Therefore, a deep learning-based translator and manual labor is used to convert English captions into appropriate Bengali ones. Finally, the model's performance is evaluated using popular evaluation metrics - BLEU and TER. The proposed approach achieves BLEU and TER scores of 0.38 and 0.76 respectively, establishing a new benchmark for Bengali video captioning task.

**A SURVEY ON PRIVACY PRESERVATION TECHNIQUES IN BIG DATA
PROCESSING: A REVIEW**

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Big data is a collection of huge volume of heterogeneous data. Due to the rapid growth of online social network users, large amount of data is generated every day. Big data processing becomes crucial because of the fast growth of data. Big data includes personal information such as personal identification, salary details, health records etc. As the volume of data increases there is a chance of increase in the privacy and security violations. Privacy refers to the protection of individual's data. Researchers have developed various privacy preservation techniques. Anonymization is suggested as one of the effective methods. In this paper we are focusing on different privacy preserving methods such as anonymization, randomization and differential privacy. It also reviewed some merits and demerits of different anonymization techniques such as k-anonymization, l-diversity and t-closeness etc.

A SURVEY ON FOREST MISFORTUNE MITIGATION SYSTEMS: A REVIEW

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One-third of the Earth's surface is covered by forests, which play a vital role in preserving biodiversity, regulating climate, reducing air pollution, providing habitat for various species, and supporting a livelihood for billions of people. Yet, despite our dependence on forests, we are still allowing them to disappear. This paper describes the various works in the field of forest misfortune mitigation systems such as prediction forest fire, animal poaching, and deforestation. The merits and demerits of various works has been reviewed and explored in this paper.

IMAGE CAPTIONBOT FOR ASSISTIVE TECHNOLOGY

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By automatically generating small descriptions from the image is extremely a challenging task due to the complexity of image features and the vastness of the language contexts. An image may contain a wide variety of information and thus extracting the context of the information contained in the image and generation of the sentence using that context is a very complex task. However, the task can help blind people to understand the surrounding without others assistance. Deep learning techniques have emerged as a new trend in programming and can be utilized to develop this kind of system. In the project, we will be using VGG16, one of the best CNN architectures for image classification and for extracting features from images. An embedding layer and LSTM will be used for text description. And these two networks will be combined to form an image caption generation network. Then we will train the model using data prepared from the flickr8k dataset. The trained model will be used to generate caption from new images and the generated caption will be converted to audio for helping the blind.

**A SURVEY ON DEEP LEARNING MODEL FOR IMPROVED DISEASE
PREDICTION WITH MULTI MEDICAL DATA SETS**

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The human society has great influence and threat from different diseases as they get affected by different diseases every day. The disease prediction method predicts the disease based on the data set available and the features, whereas the performance of the method in predicting at higher accuracy is depend on the method and measures used. This article presents a detailed survey on predicting the cardiac disease with the support of deep learning Algorithms using varying data sets. The methods of disease prediction are classified according to the core approach and each class of disease prediction has been categorized based on the approach used. In general, the problem of disease prediction is approached with PCA (Principle Component Analysis), PSO (Particle Swarm Optimization), Genetic Algorithm, Fuzzy logic, neural network, and so on. This article is focusing on analyzing the deep learning method towards the prediction of different disease with various data sets. Further, the performance analysis is conducted and presented in detail. A comparative study has been presented for the better understanding of the methods and how they have been adapted. However, there are a lot of approaches available, the deep learning-based approaches produced higher performance in disease prediction.

**ENHANCEMENT OF RK - BLOWFISH ALGORITHM FOR DATA ENCRYPTION
THROUGH BLOCK CHAIN IN HEALTHCARE SYSTEM**

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In this research work, the sensors device to be connected with network/service from everywhere, will receive signal from the biological changes of patients and transfer to the IoT middleware. Such information received by the IoT middleware is uploaded into the internet cloud, where the information is saved for further analysis. The middleware is controlled by IPv6 addressing scheme using Runge-Kutta (RK) Blowfish algorithm by making the modification of Feistel function of blowfish through combining the Blowfish and the Runge-kutta method. By this enhancement of RK- Blowfish algorithm has been reported as efficient when compared to Advanced Encryption Standard. The healthcare paradigm being the ultimate focus of IoT, it has lot of issues concerning the security, addressing scheme, objects identified and network efficiency. The versatile features of healthcare scheme can be invariably fixed by carefully studying the features.

**MOBILE CLOUD COMPUTING FOR COMPUTATION OFFLOADING USING
APPLICATION PARTITIONIN ALGORITHMS: TAXONOMY, REVIEW
TECHNIQUES**

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The processing framework which does runtime application profiling and splitting in which the services in cloud is calculated and leveraged by the smart mobile device. Although the computing capability is very much needed which the smart mobile devices provides, still it has been the problem of mobile devices. Since the computational experience is very much enhanced by the changing requirement. The sending of information to cloud and the processing capability in user side is proficient by the emerging technology which combines the computing capabilities of mobile and cloud. In this paper, discussed about the sending computing tasks and application which can be partially upload in cloud environment and the computing capabilities of mobile and for sending the information which need to be locally performed and which should be done by cloud. Partitioning for same how it is been done by different tasks and application is discussed.

COMPREHENSIVE ANALYSIS OF INTRUSION DETECTION AND PREVENTION SYSTEM AND DATASET USED IN WSN USING MACHINE LEARNING & DEEP LEARNING

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Wireless Sensor Networks (WSN) are spatially dispersed small-sized low-power sensor devices with wireless radio transceivers that sense numerous physical events and gather data in a variety of situations. Because of their restricted capabilities, haphazard deployment, and unsupervised operations, sensor nodes are vulnerable to a variety of attacks and have their security breached in harsh environments such as enemy zones. WSNs are particularly vulnerable to Denial of Service (DoS) Attacks during deployment in a hostile location when sensor nodes are physically seized and modified. Almost every layer in WSNs is vulnerable to DoS assaults, which employ a number of attacks. In this paper the characteristics of an efficient Intrusion detection and prevention system in wireless sensor networks are defined and a detailed analysis made on the datasets used in Machine Learning (ML) and Deep Learning (DL) Network to check the ability of Intrusion Detection System (IDS) and Intrusion Prevention System (IPS) to achieve higher classification accuracy rate in detecting and preventing the DoS attacks.

**DETECTING NODE REPLICATION ATTACK IN DISTRIBUTED MOBILE
WIRELESS SENSOR NETWORKS**

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Wireless Sensor Networks has less security. Due to less security, it has more attacks. One of the important attacks is the node replication attack. The sensor node will behave as a original node and collect all the important details from the network and forward it to attacker. Many researchers have proposed different techniques for detecting replica nodes. The main drawbacks of the existing system are detection accuracy is less, more time and communication overhead. The proposed system is used to detect the replica node with high detection accuracy and less communication cost and less energy efficiency when compared with the existing system.

DETECTION AND CLASSIFICATION OF COVID-19 FROM X-RAY IMAGES USING SVM-DCNN

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There is lack of attention on pre-processing the datasets to remove the diaphragm regions, normalize image contrast and reduce image noises. Apart from Covid-19 detection and classification, the severity of the COVID-19 infection has to be determined by applying deep learning (DL) based segmentation techniques which localizes the infection region. Methods: Detecting and classifying the Covid-19 from X-ray images using Support Vector Machine (SVM) and Deep Convolutional Neural Network (DCNN). A modified anisotropic diffusion filtering technique was employed to remove multiplicative speckle noise from the test images. Histogram-oriented gradient (HOG) and Image profile (IP) are extracted and fused. The fused feature is used as the input to train the classification model using hybrid SVM-CNN algorithm. It classifies the chest X-ray images into three categories that includes Covid-19, Pneumonia and normal. Experimental Results SVM-DCNN algorithm attains highest accuracy of 91.8, Precision of 91.9, Recall of 88.5 and F1-score of 94.2 when compared to DCNN and SVM.

CREDIT CARD FRAUD DETECTION BASED ON ENSEMBLE MACHINE LEARNING CLASSIFIERS

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Credit card is considered as one of the most popular paying methods for online and regular purchases, due to the advancement in communication and electronic commerce systems. Thus, the fraud associated with these transactions increased significantly. The great utilization of electronic payment is highly affected by this fraudulent transactions, which requires urgent detection to solve this issue. Therefore, effective and efficient approaches to detect fraud in credit card transactions are needed. To catch the fraudulent transaction, a good fitting model is needed, hence researchers recommends the use of various Machine Learning (ML) techniques, because of its beneficial characteristics. The main aim of the research work is to implement an ensemble based ML techniques for Credit Card Fraud Detection (CCFD). The strength of our model is a combination of the forces of the three subsystems; Recursive Feature Elimination (RFE), CCFD's using ensemble classifiers, and Synthetic Minority Oversampling (SMOTE) to deal with the problem of unbalanced data to identify the most effective prediction features. We run our typical tests on two real databases of public credit card transactions, including fraudulent and official ones. Based on the comparison of other methods using the two data sets, the proposed approach performed better and achieved high efficiencies (98.50%), accuracy (96.34%) and F1 score (57.95%).

PREDICTIVE ANALYTICS OF CRIME DATA USING SUPERVISED AND ENSEMBLE LEARNING METHODS

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Predictive analytics involves using data and machine learning techniques to determine the probability of future outcomes based on large amounts of data. Criminal acts are a part of society in every way, whether as an offender or a victim, it is inevitable that every individual has seen a criminal act. The predictive analytics approach has been used to analyze the crime data. It is achieved using a data set containing crime records. Many events of crimes are present in the crime data set. Based on the location of the crimes, the trends of crime have been analysed, based on where it happened the most, and time(week)over the years. The prediction of crimes based on time, location, and other parameters has been performed using supervised machine learning techniques including K-Nearest Neighbour, Random forest and ensemble methods.

**DIAGNOSIS THE KIDNEY FUNCTION TEST USING MACHINE LEARNING
ALGORITHM BASED ON RUNGE KUTTA METHOD**

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Liver abnormalities are increasing in India, because of rising obesity, alcohol abuse and liver infections. Also, liver disease is no longer restricted to age, as people below the age of 40 are also witnessing incidence of liver diseases. A main objective of the research to analyse the diagnosis of a liver by kidney function test and learning the level of fluctuation of parameter. In this research, the supervised learning machine learning techniques are compared, such as Hybrid Method- AdaBoost with C4.5 algorithm, C4.5 with 10-fold- cross validation and bagging with random forest. Finally, an experimental performance can be analysed by applying machine learning technique to diagnosis patients' medical data and analysing an efficiency of machine learning algorithm which one of the algorithms is better to analysis.

SMART CITY CITIZEN DIABETES PREDICTIONS USING MACHINE LEARNING

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Health and wellness is one of the most essential need for creating smart city wellbeing environment and promoting quality of life of smart city citizens. Growing urbanisation, aging population and rapid industrialization demands strategic implementation of healthcare measures for the smart city populations[1]. Deployment of health parameter observatory measures is one of the most common initiatives, that can be easily incorporated within the smart city healthcare system. This research explores diabetics as a basis and evaluation of its associated parameter such as blood sugar, hemoglobin, body mass index for understanding the relationship between health data, poor health parameters and quality of life of smart city citizens [2]. Information and communication technology can play a significant role in this efforts. Predictive analytics using machine learning is one of such derivatives of information and communication technology. Hence, machine learning can facilitates prediction of associated healthcare parameters, there by enables decision making on health and wellness of smart city citizen easier [3]. This research also identifies, evaluates and explore various machine learning techniques for predicting health related issues and deceases. The research paper further highlight future scopes research with reference to decisions on healthcare and well being of smart city citizens.

**VOLUNTEERING AWARENESS ANALYSIS WITH FOCUS ON ONLINE DIGITAL
PLATFORMS AVAILABLE FOR VOLUNTEERING IN INDIA**

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Volunteerism is a global-practice built over the concept of altruism, in which an individual or a group of individuals freely donates their time to work on social developmental difficulties without any coercion or monetary gain. This paper analyses the responses of a survey questionnaire designed to create a statistical database for volunteering awareness. We asked 110 graduation students, 97.3 % belonging to the age bracket of 18-23 years, 15 key questions about their volunteering habits – from the field of interest to overall experience. Some results were expected (motivated to make things better around, positive experience) and others were less predictable (No significant change reported in the volunteering habits before and during the pandemic of covid 19). Most importantly, there is something for us to learn from these results. You can find the graphical representation of all the responses in the appendix.

**A NOVEL APPROACH FOR DATA PRIVACY PRESERVATION USING
IMPROVED DECISION TREE ALGORITHM BASED CRYPTOGRAPHY**

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Privacy protection has emerged as a major concern in many data analysis applications. To protect individual's privacy in data publishing is a virtual task. In order to reduce the identification of specific information anonymization is utilized. The problem definition of this article utilize k-anonymization techniques such as generalization, discretization, and suppression. Thus the quasi-identifiers are used for both generalization and suppression. The attribute data can be compressed, and null values or star symbols are used. The discretization technique is used to set the ranges for sensitive identifiers. The attribute partitioning combines the correlation attributes, and tuple partitioning is used to identify the tuple in the record. When releasing a data set to third parties, privacy preservation techniques are frequently required to reduce information. Another factor to be considered while publishing the information is better data utility. A more feasible and efficient model is needed to preserve privacy and utility. The proposed method follows a cryptographic technique and an improved decision tree. The decision tree method and improved decision tree are used to maintain the data utility and error rate. It is expected that the information loss can be reduced and the securing published data.

IMPROVING OBJECT DETECTION PERFORMANCE IN VANET USING DEEP LEARNING

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With the fast improvement in keen vehicles, the security and protection issues of the Vehicular Specially appointed Organization (VANET) have drawn critical consideration. Gadgets in On-Board Unit (OBU) admittance to the web through the Vehicular Correspondence Module (VCM.) Henceforth, a real-time precise interruption discovery technique is supported applied in VCM. This paper presents a Deep Learning (DL) based start to finish interruption discovery technique to recognize malware traffic for OBUs naturally. Extraordinary from past interruption location strategies, our proposed approach requires crude traffic rather than personal data highlights separated by the human. The exhibition is contrasted and past techniques on a public dataset and a reenacted real VANET dataset. Trial results show that our strategy can be better with a lower assets necessity.

**AN INTEGRATED REGION AND PATCH FEATURE DESCRIPTOR MODEL FOR
EFFICIENT RETRIEVAL OF REMOTE SENSING IMAGES**

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In remote sensing image retrieval (RSIR), the performance of region-based descriptors is reliable for images with regular textures but fails on the textureless area. As the remote sensing images (RSI) are complex, with heterogeneous objects and backgrounds, the region-based retrieval task becomes cumbersome on these images. Also, the region-based classification methods cannot consistently identify interest points on their boundaries. This work recommends a new RSIR framework incorporating a region and patch feature descriptor (RPFDF) for high-resolution remote sensing image retrieval (HR-RSIR) tasks. The method effectively combines local patch-based features into a region-based framework through the regional context features (RCF). The RCF incorporates the information from patch-based descriptors near the regions for better classification. The proposed integrated region and patch feature descriptor framework for RSIR (IRPFDF-RSIR) focuses on semantic identification at the region level, with an augmented patch-based feature descriptor to get more understanding into the complex RSI. A weighted k-nearest neighbor (Wk-NN) classifier is incorporated in learning similar classes. The popular RSI datasets, UCMD, RS-19, and SIRI-WHU, are used throughout the studies. The results compared with various feature descriptors and frameworks substantiate the efficiency of our retrieval method in terms of precision, recall, and F1-score.

MINING ALGORITHM FOR ELIMINATING REDUNDANT DATA IN WSN

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Development on the Internet of Things (IoT) of wireless sensor networks (WSNs) is developing on a daily basis, most recently with different applications expected. These data are often transformed in numerous formats, enormous quantities and safeguarded information. For modern applications in industry, home, Smart Cities and Transportation, the quality of the information obtained from the sensor data is vital. With all these limitations available, the enhanced mining algorithm needs to be identified so as to increase the quality of services supplied by the IoT based on the WSN. This article highlights the technological problems that need to be taken into account for constructing IoT-based wireless sensor networks to improve the quality of the application on this platform.

PENMANSHIP AND SIGNAL ACKNOWLEDGMENT UTILIZING INERTIAL PEN

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This paper exhibits an inertial pen which is inertial-sensor based advanced pen and connected with Dynamic Time Traveling calculation for penmanship and signal acknowledgment. With favoured dealt with speed client holds inertial pen to compose numeral or English lowercase letters and make hand signals. The signs from the accelerometer and the gyro sensor are coordinated and gathered into a quaternion-based reciprocal channel to lessen the vital blunders from the gyro sensor which causes the inherent commotions and sign float are here and there diminishes the exactness of the direction estimation. This uses DTW based acknowledgment calculation with which it comprises of different structures like preparing, recognizable proof and afterward the recognition part. To get a prevalent class detachment for improved acknowledgment we have created to negligible between class to maximal class-based format determination technique. In the Trial results, the adequacy of the DTW-based calculation for web-based penmanship and motion utilizing the inertial pen is effectively approved.

ANALYSIS OF MACHINE LEARNING TECHNIQUES - A SURVEY

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To date, a large range of methodologies have been developed to inform the vast range of machine learning approaches. There are various forms of machine learning, including supervised, unsupervised, and reinforcement learning. Data sets with various characteristics are used to test various methods. In this work, we will focus primarily on supervised and unsupervised machine learning methodologies and their overall performance.

CHALLENGES FOR CYBER SECURITY AND TRENDS ON RECENT TECHNOLOGIES

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In the technology world, cyber security is very important. In the current situation, security for information shared on social media sites has become a major issue. When we think about security, the first thing that comes to mind is ‘Cyber Crimes’, which are fast expanding. The governments around the globe are trying to combat cybercrime. This paper mainly focuses on the new trends raised in modern time, techniques to avoid cybercrimes, ethics and also the how social media affects the cyber security.

RELIABLE ELECTRONIC VOTING UTILIZING ADJUSTED BLOCKCHAIN TECHNOLOGY

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It is extremely difficult to build a secure casting a voting system that offers decency and protection of current democratic plans. In this execution paper, we assess a utilization of blockchain as an assistance to execute conveyed electronic voting systems. Our goal is to give a decentralized engineering to run and support a democratic plan that is open, reasonable, and freely undeniable. Our proposed arrangement executes the convention which accomplishes essential e-casting a ballot properties just as offer a level of decentralization and take into account the citizen to change/update their vote and the test result shows that our proposed arrangement is helpful for the current and forthcoming democratic framework

QUICK AID: PRODUCT RENTAL APP

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QUICK AID app is an ingenious idea of renting products, aiming to help people by supplying the essential/ non-essential things with people among localities. The aim is to create a product rental app that enables the user to rent a product with people in their neighborhood or require a service, so that the product can be used by the requestor. This system could also help in building an amicable relationship among the neighbors and solve the problem of people not owning non-essential things readily. It is always difficult to find a product for rental for a short term. Using this QUICK AID App will make it easier to get products and services by using the help of other users. Quick aid delivers Simple yet thoughtful way to request for Items or services using a simple form that the user needs to fill in, after which this request is notified to every other user of the app, so interested people could help them.

PREDICTION OF SPREAD OF COVID-19 INFECTIONS - A TIME-SERIES BASED APPROACH

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Covid-19 has hard-pressed world to handle one of the major health emergencies of modern times. In this scenario, prediction or forecasting the new infections and the rate of death is the need of the hour for effective preparedness in terms of medical facility, vaccinations and other requirements to eradicate the disease from further spread. As on 29th August 2021, according to the Ministry of Health and Family Welfare, Govt of India Sources, a total of 4,37,830 Death cases have been reported in 28 states and 8 union territories. The vaccination to all, proper medical treatment policy, maintaining social distancing, cleanliness and awareness of seriousness about the infection will lead to the end of the current pandemic situation. This paper aims to describe the empirical study of modelling and forecasting time series data of COVID 19 for India. COVID data for the period of 30.01.2020 to 27.08.2021 were collected from Ministry of Health, Govt of India and analysed by applying Time Series approach and the ARIMA model is used for forecasting. The proposed model is tested using Lag 1 autocorrelation of error (acf1), minmax error and correlation and the obtained results are promising. The proposed time series models proved to be an effective approach as the level of accuracy is close to 96% in case of both infections and deceased rate.

AGRICULTURE CROP RECOMMENDATION SYSTEM USING MACHINE- LEARNING

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Machine learning (ML) could be a crucial, means of getting a sensible and real-world answer towards, the crop production downside. metric capacity unit will, predict a target/outcome from a collection of predictors via supervised Learning. to get the required results, produce an acceptable perform employing a set of variables which will translate the input variable to the supposed output. Crop yield prediction is predicting a crop's production supported historical information that features parameters like temperature, humidity, pH, rainfall, and crop name. It offers U.S. a concept of the best-predicted crop which will be adult within the field given the meteorologic circumstances. exactitude agriculture is that the application of newest agricultural technologies. A machine learning algorithmic rule called Random Forest and KNN are often wont to build these predictions. it'll win the foremost correct crop prediction doable. The random forest methodology is employed to work out the most effective crop yield.

**LANGUAGE RECOGNITION FROM HANDWRITING BASED ON MACHINE
LEARNING & DEEP LEARNING**

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In order to develop the understandings of the machinery mind, there has been a lot of upfold in the development of machine learning. As humans, we learn how to do a task by learning it, and optimize the tasks by learning from the mistakes in the process. Just like the brain's neurons automatically trigger and quickly perform learnt tasks, machines can comprehend to the situations of strengthening developed neurons. Deep learning is just as interesting as the human brain's concept. Usage of different types of architectures for such neural networks collide for different types of problems, like image and sound classification, object recognition, image segmentation, object detection, etc. Following these layers of different commemorations and accuracy that Artificial Intelligence provides, one can come up with answers to many unresolved issues, problems, and tasks, since machine is now with the capability of approaching the task as if it is of a human's approach, but with the ability to drive through the task with the machine's work function. The fact that Machine Learning and Deep Learning had taken the industry up by storm is the very reason for its unending usages in this field. The very fabrics of precision and balance that a task completed under the machine's supervision is where we can entrust tasks that can bring a change for many lives with challenges, ailments and difficulties.

BLIND ASSISTANCE SYSTEM USING TENSOR FLOW

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One of the most well-known types of human correspondence is email. There is a ton of classified and earnest data trade here today. There are around 253 million individuals on the planet with visual disabilities. These individuals with visual disabilities face correspondence issues. As innovation progresses step by step, individuals with visual weaknesses might have issues. In this manner, we have proposed a framework that utilizes AI, which makes the framework more straightforward to use for individuals with visual impedances and to help society. A significant variable in fostering a framework is basic.

MACHINE LEARNING DRIVEN FIREWALL FOR MODERN ATTACKS

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With rapid digitalization, the shift of people to digital transactions, usage of crypto and digital currencies have increased a lot. Social media made connecting to friends and family at the end of fingertips, ecommerce sites made shopping super-fast and reliable. Though all these make the life of a common man very comfortable, this also increases cyber-attacks exponentially on both common people and organizations. Though, there are a lot of security measures taken by the government and private organizations in securing applications from attacks that aren't enough to secure the common man from cyber-attacks. There are attacks like injections, Distributed Denial of Service (DDoS) which can do huge damage to the organization. In this paper, we are going to see an approach that uses a machine learning model trained by a real-time dataset extracted from a real-time attack scenario. Which can be used in a firewall. This machine learning model monitors incoming data requests. Based on predictions made by the ML model the query is executed at the server.

INFORMATION TO INFERENCE – A PROCESS FLOW USING KNOWLEDGE GRAPH

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Every day massive amount of data is created due to the constant use of the internet. During the COVID-19 pandemic, people are constantly learning to obtain knowledge at a faster pace. The knowledge graph can represent huge volumes of data and inference can be gained in lesser time. In our work, we have proposed a technique that initially cleans the scholarly data and then retrieves the entities and explores the relations between entities. Finally, we can split the knowledge graph using different methods to gain knowledge about the nodes and find the reasoning in their relation. The experimental results visually indicates that we can draw inference from the real triplets of the customized knowledge graph.

AN IMPROVED FUZZY CLUSTERING METHOD FOR ANALYZING CLUSTER QUALITY IN XML WEB DATA

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Web extensible markup language (XML) data quality analysis using clustering is necessary in many real time web applications. In huge applications XML is the standard format to explore the web data. In existing approaches the XML web data is clustered by using Weighted Fuzzy C means (WFCM), LSI (Latent Semantic Indexing), LSI* (Enhanced Latent Semantic Indexing) and K-means clustering approach. The existing approach generates degrades the efficiency of the performance. The performance of the clustering is increased by the novelty technique Improved Fuzzy Clustering Method (I-FCM) in this article. I-FCM is the machine learning method that clusters the XML data better than the other existing methods. First, using keyword the features are extracted from the XML web repository. Next, cluster the extracted features using I-FCM approach. Finally, necessary performance parameters in the clustering of XML data are analyzed. This article used the platform MATLAB to demonstrate the proposed approach. For the experimental purpose the LF-AMAZON dataset is utilized. The parameters accuracy, purity, entropy, and search time is utilized to measure the performance of the novelty technique. This performance is compared with the existing approach. The output of the novelty work shows the better performance and robust result is generated than the existing method.

TUBERCULOSIS DETECTION USING DEEP LEARNING MODELS

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Tuberculosis is one of the most ancient diseases and still it is one of the top 10 causes of death across the world. Our objective is to prepare a model which classifies the chest x-ray. This model contains two classes normal and abnormal (infected with TB) we need to classify between these two classes and also to achieve high accuracy while classifying. In our proposed approach we will be improving the accuracy of model by using deep neural networks to train the model and that model helps us in classifying new chest x-ray given as input to the model thus meeting our objective. To achieve good accuracy, we need pre-process the images thus we pre-processed the images we took images from both datasets Shenzhen and Montgomery and together there are 800 chest x rays, we did augmentation over the 680 training set images and normalized them followed by giving these pre-processed images as inputs to our models for training then we performed testing of model over testing set of 120 images out of 800. In this project we used two models baseline CNN model and pretrained VGG16 model and gave pre- processed images as inputs to these both models and evaluated the models to see which performed better comparing using different performance metrics like accuracy, specificity, sensitivity, precision and f1-score and depicted them using graphs and tables, baseline CNN model gave an accuracy of 82% and VGG16 gave an accuracy of 90%.

HYBRID DEEP LEARNING BASED LUNG DISEASE DETECTION AND CLASSIFICATION

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Early precise detection of lung nodule is overwhelming of time and susceptible to error factor of the radiologist analysis work. Recent lung nodule detection are based on CNN and Faster RCNN results good accuracy and superior performance in classification. However, this is an object detection algorithm means find where the objects are present. Apart from object detection Mask RCNN is an extension of faster RCNN implementing segmentation on image means separating the pixels that belongs to particular object. Image segmentation work with the help of Mask RCNN, We can perform object detection and also specifically locate the position of cancer tumor in lung. We proposed a 3D Mask RCNN for Simultaneous detection and Segmentation of lung nodule probing more number of training and testing data to reduce the false positive reduction and achieve higher accuracy and sensitivity. For further advancing the performance of our work we investigated more than 2000 ground truth nodules from publically available LIDC/IDRI dataset advantageous to boost our Mask RCNN detection. Experiment results shows that the proposed network succeeds accuracy of 96.8%., sensitivity of 94.8% and specificity of 97.2%. After evaluation and investigation the results of segmentation our proposed method outperformed compared to other literature.

PERFORMANCE PREDICTION FOR STUDENTS USING MACHINE LEARNING MODELS

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Assessing academic events is an essential responsibility for anybody who is actively learning in modern educational institutions, institutions of higher education, and schools. The determinants that influence the student actively learning academic acts are class testing room exams and semester exams. The student actively learning's academic conduct concedes the possibility to learn from the class student who educates them earlier. That will decrease the student's failing student and increase their accomplishment. In this paper, ML categorization algorithms happen to start to express an outcome in advance of the student actively learning academic conduct. The efficiency of Machine Learning algorithms predicts precision, or correctness, accuracy, recall, and an F1 score. The result shows that the SVM, KNN acts better.

AN EFFICIENT PARKING ALLOCATION SCHEME BASED ON K-MEANS CLUSTERING METHOD

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With the development of the automobile sector in our country in recent years, the number of vehicles in use has constantly increased. As a result, the rate of expansion in the number of urban motor vehicles greatly outpaces the rate of parking facility building. The idea of ongoing improvement and development of parking distribution systems has always been important to the city's smooth operation. As a result, building an effective and dynamic parking algorithm will be a significant step forward in addressing the problem of urban parking shortages. As a result, utilising the K-Means Algorithm, this study developed a strategy for parking allocation. The findings of the experiments reveal that a dynamic parking distribution model based on K-Means Clustering can not only anticipate and allocate parking spaces in real time, but also enhance the utilisation rate of various types of parking spaces. As a result, it makes a substantial contribution to smarter and more sustainable urban parking management. In this paper an efficient parking allocation model is proposed and the research findings to predict the number of available parking spaces is discussed.

FINDING LOST CHILD BY FACE DETECTION USING MACHINE LEARNING ALGORITHM

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Abstract— The technological developments in recent days have made people's life more convenient. A wild proliferation of face detection techniques is being exercised for various media applications where the people's facial contour has distinguished a system of cameras. Facial contours concepts are seemed to be in a fictional world, but the evolution of technology makes us to slowly realize them as reality. The paper explains about spotting the lost child in crowded places by comparing their faces with several surveillance systems implemented in the surrounding using a Convolution Neural Networks (CNN) appended with Viola-Jones Algorithm. CNN patterns the connectivity between the neurons that coincide the organization of a person's facial muscle. Thus, the paper aims to find the missing persons in a quicker-way than the usual scenario.

**MEASURING THE EFFECT OF E-LEARNING DURING PANDEMIC COVID 19
AMONG RURAL STUDENTS: THE CASE STUDY OF RURAL STUDENTS
RESIDING IN CHENGALPATTU**

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The global pandemic, COVID-19 have initiated the social distancing and digital platforms to enhance the E-Learning method. People started practicing to stay indoors and being idle within indoor may lead to mental stress. In order to make people more involved and stress free, online learning is playing an important role. In this pandemic situation, online mode of learning is the best solution. Professors and other teaching professionals are making use of the virtual teaching platforms to teach from their home with all effective tools needed, which indeed makes the online sessions effective as the traditional ones. Pandemic has changed the whole process of teaching and learning. This has made learners to stay at their place and connect virtually for a long period of time and which in turn obstructs teaching and learning process. This Research frame work emphasizes on the beneficial aspects of online learning at the time of pandemics. The continuous learning process emphasized through online learning with some digital tools and techniques. Education is being transformed not only in private schools, but it is being slowly setting benchmark in government schools also. E-learning technology is now creating new avenues and transforming the education sector. The preparation of teachers for online classes has changed. As the rural area Schools and colleges are getting adapted to the technological advancement e-learning is getting into a positive transformation. It is a great motivating factor that the rural area is trying adapt to the digitally enhanced learning method from the traditional methods. Even though having many benefits in E-Learning there are some obstacles in online learning but still digital learning have employed. The one factor of consent is that the rural area students are not fully equipped with technological factors like uninterrupted power supply, internet and mobile devices. Student behavior and attitude has changed in online classroom. Still many rural areas in India are trying

to find solution for the above challenges to become eligible to receive education completely online or in digital format.

DETECTION OF ABNORMALITIES IN BRAIN USING MACHINE LEARNING IN MEDICAL IMAGE ANALYSIS

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In a variety of medical diagnostic applications, Automatic Defect Detection in clinical imaging has turned into the developing field. Computerized discovery of cancer in MRI which gives the data about the aberrant tissues which is essential for the diagnosis. The traditional technique for Abnormalities detection in Brain is human investigation. This strategy is illogical because of the vast volume of data and the imperfection. Henceforth, trusted and programmed algorithms are preferred to prevent the passing pace of human. In this way, Automated tumour discovery techniques are created as it would save the specialist (radiologist) time and acquire the perfectness. Because of the complexity and variety of malignancies, MRI brain tumours potting is a tough operation. In this study, we suggest to employing machine learning methods to overcome the barrier of classical classifiers in the detection of tumours in brain MRI. With the use of MRI images, machine learning and image classifiers can be used to effectively identify the sick cells from healthy cells.

**A STUDY ON STUDENT'S VIEW TOWARDS ONLINE LEARNING PLATFORMS
IN HIGHER EDUCATIONAL INSTITUTIONS (HEI's)**

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Online education is electronically supported learning system which is supported by the Internet for taking classes. Both the teacher and the students play a vital role in the success of this platform. It is very supportive in this pandemics to the students as they attend their regular classes anywhere provided they have internet access. These digital platforms have given a great solution to continue learning as HEI's can reach their students in this pandemic. Hence the present study aims to understand the perception of students towards online learning in Higher Educational Institutions. The researcher has conducted this study in Chennai, Tamilnadu with a well designed questionnaire. A sample of 285 students from various educational institutions from different years and different courses were included as sample for the study. The study objective was to understand the perception of students towards online education. Convenience sampling technique was used by the researcher to collect data from students and the data is analyzed with SPSS tool. Chi square Test and ANOVA was applied by the researcher to analyze the data. The research findings help to understand student's attitude towards online education.

INTRUSION DETECTION IN SOFTWARE DEFINED NETWORK USING MACHINE LEARNING

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The entrance framework (IDS) is right now exceptionally fascinating as a significant piece of framework security. The IDS gathers traffic data from the line or framework and afterward involves it for better security. Assaults are typically truly challenging and tedious to isolate street exercises. To screen the organization association, the examiner should survey all data, enormous and wide. Subsequently, an organization search strategy is expected to decide the recurrence of traffic. In this review, another strategy for looking for IDS identifiers was created utilizing a technique for concentrating on information mining procedures from a calculation machine. The technique used to set the principles is to sort the choice tree and calculation. These guidelines can be utilized to decide the idea of the assault and afterward apply it to the hereditary calculation for avoidance, so that as well as distinguishing the assault, it is feasible to find ways to forestall the assault and deny the assault.

COMMUNICATION INTERPRETATION USING MACHINE LEARNING AND OPENCV

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The first look of signal language is dated an extended again however the starting place continues to be unknown, however maximum people will agree that the usage of diverse hand gestures to exists and produce so long as any date communicable language and its miles manner thru which we bring any message and the usage of a fixed predefined gestures, motion and actions. Most of the languages are here by advanced to benefit human beings having problems speaking to deaf or verbally specially challenged human beings. They use a simultaneous and unique combination of movement of hands, the orientation of hands, hand shapes, etc. Different regions have one in every of a type sign languages like American Sign Language, Indian Sign Language. In this application we are working in Indian Sign language. Due to the comparative scarcity of conventional signal language used inside our community, deaf and different verbally challenged men and women administer to stand diverse troubles in everyday verbal exchange on each day basis. this assignment specifically objectives to offer a deep cease evaluation into motion-primarily based totally language translation implemented on a simplified machine, because of its portability and simplicity of use. In this assignment, we've used a framework comprising set up photograph processing strategies to endorse a set of rules to understand photos of numerous alphabets in Indian signal language motion gestures. Specifically, we at the start we can enforce Canny edge detection and cropped-out the undesirable location which have been developing to phase the body gesture from its unwanted regions and different useless disturbance. Feature factors are then extracted with Speeded Up Support Robust Features set of rules (SURF), whose capabilities are derived thru Bag of Features (BoF). Support Vector Machine (SVM) is ultimately implemented to categorize our gesture photograph dataset: in which the skilled dataset is used to understand Indian sign language gesture inputs. We study wonderful machine learning techniques like Support Vector Machines (SVM), Logistic Regression, K-nearest neighbors (KNN) and a neural network method Convolution Neural Networks (CNN) for detection of sign language.

REAL LOOKING NUMBER IMAGE GENERATION USING GAN

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Proposed Model in this paper is an advancement of Handwritten Digit Recognition System. Our model generates the images of number which looks real. The technology behind this is Machine Learning Generative Adversarial Networks, which is a Generative model which generates two adverse models. MNIST dataset have been used in this model. This model was developed to produce a prototype for developing a model which can generate a crime scenarios which are not being captured, especially in rural areas, with the help of activities happened on the spot of Crime. The enhancement of this model could solve so many problems specially solving crime cases effectively and quickly. This project is divided into three parts namely, Training Discriminator, Training a Generator, and Generating the Realistic Numbers. Our model has met all the objectives derived and planned. The project is considered successful.