International Conference on

HIGH PERFORMANCE AND INTELLIGENT COMPUTING

ICHPIC - 2022

December 7 - 9, 2022

SOUVENIR

Organised by
Department of Computer Science & Engineering
PSG College of Technology

In collaboration with
PSG Centre for Academic Research & Excellence
Coimbatore - 641004
www.psgcare.org

INTERNATIONAL CONFERENCE ON

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PREFACE

The advent of development in computing and communication techniques has opened up a new venue for High Performance and Intelligent Computing. These advancements on one hand result in enhancement of computing technology, On the other hand, computing workloads evolve and change with advances in micro architecture, compilers, programming languages, and networking communication technologies. Whether they are smart phones and deeply embedded systems at the low end or massively parallel systems at the high end, there is a huge scope for improvement in the design of future computing techniques.

ICHPIC'22 provides a venue for presenting high-quality original research, innovative ideas, and compelling insights on future trends in high performance computing and its applications. High Performance computing includes techniques from High Performance Computer Architecture, High Performance Computer System Software, High Performance Computing Environments, High Performance Storage Technology, Software and Algorithm of Parallel and Distributed System, High Performance Ubiquitous Computing, High Performance Blockchain Technology, Big Data Technology and Its Applications, Big Data Durability and Storage, Big Data Protection Integrity and Privacy.

This conference also broadly focuses on several innovation paradigms in system knowledge, intelligence and sustainability that can help to provide realistic solutions to various problems confronting society, the environment, and industry. The intelligent computing technology includes a range of techniques such as Artificial Intelligence, Pattern Recognition, Neural Network and Learning Systems, Computer Vision, Smart Sensor and Sensor Fusion, Intelligent Storage Device and System, Real Time System, Adaptive System, AR/VR/MR, Complex Systems and Networks, Evolutionary Computing, Informatics Theories and Applications, Computational Neuroscience & Bioscience, Soft Computing, Human Computer Interface Issues, etc. Focusing on a variety of methods and systems as well as practical examples, this conference is a significant resource for post graduate-level students, decision makers, and researchers in both public and private sectors who are seeking research-based methods for modeling uncertain and unpredictable real-world problems.

Therefore, in ICHPIC 2022, it was decided to give the following themes in call for papers:

- Optimization Algorithms
- Genetic Algorithms
- Bio Inspired Algorithms
- Neural Networks
- Computer Networks
- Natural Language Processing
- Security, Privacy and Cryptography
- Internet of Things
- Data Analysis
- Machine Learning
- Statistical Analysis
- Healthcare Systems
- Artificial Intelligence
- Fuzzy Systems
- Cloud computing
- Database Management Systems
- Image Processing
- Deep Learning
- Computer vision

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The three-day conference features preconference workshops, keynote addresses, invited talks on High Performance and Intelligent Computing and Applications, paper presentations and tutorials delivered by leading experts in the respective fields.

We sincerely appreciate the cooperation and guidance received from members of the Organizing Committee, Advisory Committee and the Technical Committee. Our heartfelt thanks to **Shri. L. Gopalakrishnan,** our Managing Trustee, for his continuous support and suggestions for improvement. We extend our gratefulness to **Dr. R. Rudramoorthy,** the Director of PSG CARE, for his valuable assistance for the success of the conference. We wish to express our gratefulness and thanks to **Dr. K. Prakasan**, our Principal, who was the driving force behind this conference. We place on record a sincere thanks to **Dr. G. Sudha Sadasivam**, Head of the Department, who is the convenor of the conference, for their time, efforts, and enthusiastic guidance in planning and organizing this conference.

We are greatly indebted to the Organizing Secretaries and Co-ordinators for their tireless support right from the planning stage till the curtain closure stage of this mega event. We thank all the Organizing members, faculty, staff and students belonging to the Department of Computer Science and Engineering, for their wholehearted involvement and cooperation extended in organizing this conference.

Our special thanks are due to the reviewers for sparing their valuable time in their arduous task of reviewing the papers and suggesting improvement in submitted papers. We express our sincere thanks to all guests, speakers, Chairpersons and Co-Chairpersons for various sessions from December 7 to 9, 2022 for their presence.

We thank all the Inland and Foreign authors for showing a great interest in sending their papers to the conference. We thank all the registered participants for their immense confidence in belief on the institution's great reputation.

Our special thanks to the placement cell of our institution for their magnificent support, in mobilizing sponsorship from our leading recruiters. We also acknowledge with gratitude, the financial support provided to the conference by Verticurl, Aqua Group and Byju's. We also thank ACM and MathWorks for extending their technical support for the conference

We received a great response of more than 100 papers, out of which 68 were selected. Apart from inaugural and valedictory sessions, 6 plenary talks by renowned resource persons from reputed academic institutions and industries across the globe. 9 paper presentation sessions covering various themes have been scheduled for the two days.

We are sure that this conference, a resultant of the meticulous efforts by various organizing committees will help the participants to explore new avenues and dimensions pertaining to the central theme of the conference namely, High performance and Intelligent Computing. The recommendations given by various experts involved in the conference programme will be summarized and communicated to various departments of the Government, Public and Private sector Organizations for their best possible use in advancement of the nation.

Dr. N. Arulanand

Dr. S. Lovelyn Rose

Dr. K. Sathiyapriya

Organizing Secretaries (ICHPIC 2022)

ISBN: 978-93-95105-03-3

ABOUT PSG COLLEGE OF TECHNOLOGY

PSG College of Technology, an ISO 9001:2000 certified institution is one of the foremost institutions founded by the PSG & Sons' Charities Trust (1926). The College was established in the year 1951 and the Founders wisely decided to locate it in the same campus as the PSG Industrial Institute for effective industry-institute interaction. The PSG College of Technology is situated at about 8 km from Coimbatore Railway Station and 5 km from Airport. The campus is spread over 45 acres of land, economically utilised for the College, Hostels, Staff Quarters, Play Fields and Gardens. PSG College of Technology, under the guidance of illustrious Managing Trustees Sri G R Govindarajulu, Dr G R Damodaran, Sri G Varadaraj, Sri G R Karthikeyan, Sri V Rajan, Sri G Rangaswamy and presently under Sri L Gopalakrishnan, all with foresight and far-reaching vision, has been in the forefront of innovation in technical education. The founder Principal Dr G R Damodaran was instrumental in the planned growth of the institution from the humble beginnings in 1951 to the present status of a world-renowned technological institution. The College today has a student strength of about 8418 with 63 programmes besides the computer applications, management sciences, basic sciences and humanities departments. PSG College of technology performs excellently with the dedicated service of 580 teaching faculty and 380 supporting staff. Among the various Under-Graduate and Postgraduate programmes offered by the college, as many as 18 programmes were accredited in the year 1997 itself by the National Board of Accreditation of AICTE. Each department conducts annually at least one National / International Conference / Seminar / Workshop for effective dissemination of state-of-art technologies and research findings for the benefit of teaching faculty and industries. On an average every year, five short term programmes on current topics of interest are conducted for the teaching faculty from other colleges with funding from AICTE / ISTE and other agencies. More than 600 research scholars are pursuing research programmes and the college is a recognised QIP centre for Postgraduate and Ph D programmes. Several advanced centers are set up with financial support from the Ministry of Human Resources Development, DST and other agencies. These include: the CAD/CAM/CIM Centre, Virtual Reality Centre, Virtual Instrumentation Centre, Educational Technology Centre, Centre for Non-Formal and Continuing Education, PROJECT IMPACT, UNDP Jute Project Centre, TIFAC - CORE, Rapid Prototyping and Manufacturing Centre, Festo-PSG Centre for Pneumatic and Control Engineering, Metals Testing and Research Centre, Industry Institute Partnership Cell and CII - TDB TNET Centre. The programmes of the college are recognised all over India and abroad. The college maintains close interaction with several R&D Institutions and institutions of higher learning in India and abroad, through institutional network programmes and collaborative research programmes links with industries in the fields of Automotive, Aerospace, Defence, Textile, Machine Tools, Software Development and Consumer durables. The college has been the recipient of several prestigious projects and International funding support. The college was conferred the AUTONOMOUS STATUS by the University of Madras in the academic year 1978-79, which is continued by the Bharathiar University and subsequently by Anna University. This enables the college to frame its own curricula, update syllabi and introduce new courses as and when needed. The college is empowered to administer its own evaluation system.

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ABOUT THE DEPARTMENT

Department of Computer Science and Engineering

The Department of Computer Science and Engineering, with its dedicated body of well-qualified faculty, technical staff and students, is committed to be an international, multi-disciplinary center of excellence in Computer Science and Engineering through education and research. It has partnerships with other leading Academic institutions, Government and industrial sectors. It has acquired generous grants from global organizations like World Bank, Swiss Development Co-operation for Manpower Development, the Department of Electronics, VSSC, AICTE and the Ministry of Information Technology, DBT, DST, DRDO and UGC. The department carries out consultancy work with organisations like Cloudera, Impiger, Cordys. The Vision of the Department is to become a global leader in education and research in the field of Computer Science & Engineering for societal benefit. The mission of the department is to:

- Develop high quality Computer Science & Engineering graduates with Technical and Professional skills.
- Foster research to solve real world problems with emerging technologies and social consciousness.
- The department has state of the art laboratories in Open Source Systems, Networking, Software Engineering, Cloud Computing, Embedded Systems and Big Data Analytics. The department also hosts a center of excellence in Assistive Technology and Artificial Intelligence.

ABOUT PSG CARE

The PSG Center for Academic Research and Excellence was founded in October, 2015 by the PSG & Sons Charities Trust with a mission to promote teaching excellence in all the colleges under the Trust. Toward this end, CARE will encourage the use of learner-centric pedagogical practices that facilitate effective learning and will foster dialogue and reflection on effective teaching through workshops, seminars, one-to-one consultation and other activities. The center also focuses on creating and sustaining effective faculty student relationships and aims to pursue its mission by: Helping educators at PSG to practice a learner-centric course design, innovative pedagogy and effective assessments so as to shift the focus of the teaching learning process from delivery of knowledge to facilitation of knowledge acquisition Offering an effective one-to-one mentoring system to the faculty in various topics pertaining to learner-centric pedagogy and effective faculty student relationships Promoting the use of technology in the PSG classrooms and establishing an environment for effective use of technology in enhancing the teaching- learning process. Helping faculty members assess the effectiveness of their teaching through appropriate student and peer feedback mechanisms Encouraging research activities that enhance the quality of teaching at PSG and supporting dissemination. of research findings about the teaching learning process.

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Messages

Message from the MANAGING TRUSTEE

I am happy to note that the Department of Computer Science and Engineering, PSG College of Technology is organizing the **"International Conference on High Performance and Intelligent Computing (ICHPIC)"** on 7th, 8th and 9th of December 2022.

It is through data that ground-breaking scientific discoveries are made, game-changing innovations are fuelled, and quality of life is improved for billions of people around the globe. High performance computing is the foundation for scientific, industrial, and societal advancements. The future of high-performance computing includes improvement in scalability and computing power.

Intelligent computing has greatly broadened the scope of computing. Intelligence and computing have undergone paths of different evolution and development for a long time and have become increasingly intertwined in recent years. Intelligent computing is still in its infancy and an abundance of innovations in the theories, systems, and applications of intelligent computing ·are expected to occur soon.

I am happy about the fact that researchers and delegates of different countries will be participating in this conference. I am sure that this conference will enlighten the students, academicians and researchers on the future research ideas.

I give my best wishes to all delegates and organizing committee members to make this event a grand success.

MANAGING TRUSTEE

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Messages

Message from the DIRECTOR OF PSG CARE

'International Conference on High Performance and Intelligent Computing' is a brilliant initiative taken by the Computer Science Department with the support of the PSG Centre for Academic Research and Excellence (PSG-CARE). Intelligent computing has led to the birth of a new era. As said, "Computers are the enzymes of the culture; they greatly enhance the speed of human interaction in society". These days, when everything is automated rapidly, a conference of this kind is a necessity.

Deep learning, which is a component of intelligent computing, is on the track of creating machines that can think like humans. Similarly, every other component of intelligent computing focuses on unimaginable innovations. This conference will surely bring likeminded people together and pave the way for new inventions and creations. Everything has become digital nowadays. Rather than looking into its negative side, let us look into the positive side and take humanity one step forward.

I sincerely acknowledge the efforts taken by the event organizers and wish for the success of the conference

Director, PSG Care

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Messages

International Conference on High Performance and Intelligent Computing 2022

Message from the PRINCIPAL

I am very much pleased to write a brief note on the **International conference on "High Performance and Intelligent Computing"** held at PSG College of Technology, organized by Department of Computer Science and Engineering, PSG College of Technology. This conference is supported by PSG Centre for Academic Research and Excellence (PSG CARE). PSG College of Technology has always been at the forefront in assimilating new technological developments and implementing them for the benefit of society. I am confident that this conference will be another step in this endeavour. I welcome you all for this Conference to participate in fruitful discussions and experience sharing.

I congratulate the organizers for their efforts in arranging this event and wish the conference a grand success.

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Messages

Message from the CONVENOR

Edward Teller rightly say's 'The science of today is the technology of tomorrow'. The department of Computer Science and Engineering strives to keep pace with the technological changes. In the era of the Internet of Things (IOT) and Big Data, it is essential to keep updated on high performance and intelligent computing trends to manage data. It has become all the more important due to challenges faced in handling the volume, velocity and variety of data from various domains.

I am optimistic that the **International Conference on High Performance and Intelligent Computing** will help to provide a platform to deliberate on the challenges, problems, solutions and difficulties in providing intelligent and effective solutions to real world problems.

I extend my gratitude to the college and management, without whose support this conference would not have been possible. I hope that the conference will bring a positive change in the field of applied computer science.

Dr. G. Sudha Sadasivam

(HOD, CSE)

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International Conference on High Performance and Intelligent Computing – ICHPIC 2022

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10	Catering Committee	• Menu • Taking care of the arrangements & readiness of food in the canteen for participants & Chief guest. • Submission of bills	Dr. V. Santhi Dr. N. Gopika Rani

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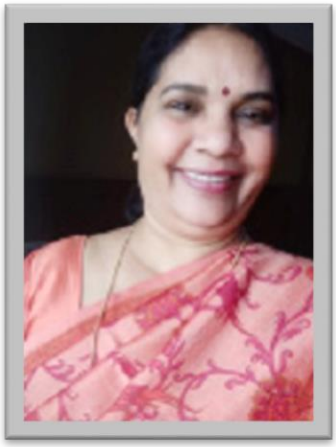

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PLENARY TALKS

7TH DECEMBER (PRE – CONFERENCE)

Mr. Debanand Singdeo

Senior Engineer, Education Team, Mathworks

"Deep Learning by MathWorks"

Dr. D. Surendran

Founder & CEO SKS Skill Fasteners, Coimbatore

"The Future Metaverse – Opportunities Beyond the Hype"

8TH DECEMBER

Mr. Saravanan Narayanasamy

Sr. Director, Head of R&D, Philips healthcare

"Transformation in healthcare delivery enabled by Advanced Image processing"

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Dr. Vincenzo Piuri

Professor, Computer Engineering University of Milan, Italy

"Fogg/Edge Computing"

Dr. Gang Li

Associate Professor, School of Info Technology Melbourne Burwood, Campus Deakin University

"Generative Adversarial Network for Tabular Data "

9TH DECEMBER

Dr. Sachindra Joshi

Senior Technical Staff Member and Research Manager, IBM Research, New Delhi.

"AI for Customer Care"

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Dr. Anand Nayyar

Scientist, Vice-Chairman (Research) and Director- IoT and Intelligent Systems Lab, School of Computer Science-Duy Tan University

"Metaverse in multidisciplinary applications and its perspectives"

Dr. Sekar Sriram

Associate Director – Client Services, Verticurl, Coimbatore

"How does AI help in marketing?"

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International Conference on High Performance and Intelligent Computing - ICHPIC'22
SESSION DETAILS
7 th December 2022
PRECONFERENCE WORKSHOP
9.00 am to 12.30 pm - Mr. Debanand Singdeo ,Senior Engineer, Education Team, Mathworks Title: “Deep Learning by MathWorks”, Venue: F-203
12.30 pm to 01.30 pm: Lunch Break
1.30 pm to 05.00 pm: Dr. D. Surendran, Founder & CEO SKS Skill Fasteners Coimbatore “The Future Metaverse – Opportunities Beyond the Hype”, Venue: F-203
8th December 2022
09.00 am to 9.40 am - Inauguration Chief Guest: Mr. Saravanan Narayanasamy, Sr. Director, Head of R&D, Philips healthcare Venue: D-Block (GF) Offline Mode
09.45 am to 10.30 am - **Keynote -1** Mr. Saravanan Narayanasamy, Sr. Director, Head of R&D, Philips healthcare "Transformation in healthcare delivery enabled by Advanced Image processing" Venue: D-Block (GF) Offline Mode
10.30 am to 11.00 am – Break

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11.00 am - 12.30 pm Technical Sessions - Track 1,2,3		
Topic: (Offline) Optimization Algorithms, Genetic Algorithms, Bio Inspired Algorithms, Neural Networks Chairperson: Dr. D. Indumathi Co-Chairperson:Dr. K. Sathiyapriya Venue: F-203 Session - Incharge: Ms.C.D.Anisha	**Topic:** (Offline): Computer Networks, Natural Language Processing (NLP) Chairperson: Dr. V. Santhi Co-Chairperson:Dr. N. Geetha Venue: EB - Seminar Hall Session - Incharge: Ms. S. Arul Jothi	**Topic:** (Online) Security, Privacy and Cryptography Chairperson: Dr.N. Gopikarani Co-Chairperson:Dr. S. VijayaLakshmi Venue: PSG CARE Seminar Hall Session - Incharge: Ms.K. Vani
Paper ID: Mail-016, Mail-024, Mail-030, Mail-031, PI-00047, PI-00051, PI-00063	**Paper ID**: Mail-018, Mail-019, Mail-020, Mail-025, Mail-026, Mail-039, Mail-040	**Paper ID**: Mail-027, Mail-029, Mail-032, Mail-035, Mail-037, PI-00025, PI-00045, PI-00052, PI-00053
12.30 pm to 01.30 pm - Lunch Break		
01.30 pm to 2.30 pm	**Keynote -2** Dr.Vincenzo Piuri Professor, Computer Engineering University of Milan, Italy "Artificial Intelligence inCloud/Fog/Edge Computing & IoT" Venue: F-203 (Online Mode)	**Keynote -3** Dr.Gang Li Associate Professor School of Info Technology Melbourne Burwood Campus Deakin University "Generative Adversarial Network for Tabular Data " Venue: EB-Seminar Hall (Online Mode)
02.30 pm to 02.45 pm - Break		
2.45 pm to 04.45 pm Technical Sessions - Track 4, 5, 6		
Topic: (Online) Internet of Things Chairperson: Dr. L.S. JayaShree Co-Chairperson:Dr. K. G. Saranya Venue: F-203 Session - Incharge: Ms.R. Thirumagal	**Topic:** (Online) Data Analysis, Machine Learning, Statistical Analysis Chairperson: Dr. S. Suriya Co-Chairperson:Dr. M. Mekala Venue: PSG CARE Seminar Hall Session - Incharge: Mr. A. C. Ramesh	**Topic:** (Online) Healthcare Systems Chairperson: Dr. N. Arulanand Co-Chairperson:Dr. K. Mohan Venue: EB - Seminar Hall Session - Incharge: Ms.T.Anusha
Paper ID: Mail-003, Mail-023, Mail-033, Mail-041, PI-00067, PI-00027, PI-00058, Mail-042	**Paper ID**: Mail-007, Mail-012, Mail-017, Mail-034, PI-00055, PI-00057, PI-00066, Mail-021	**Paper ID**: Mail-013, Mail-043, PI-00010, PI-00011, PI-00036, PI-00042, PI-00060

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9th December 2022		
09.15 am to 10.30 am **Keynote -4** Dr. Sachindra Joshi Senior Technical Staff Member and research manager IBM Research, New Delhi. "AI for Customer Care" Venue: F-203 (Online Mode)		
10.30 am to 10.45 am - Break		
10.45 am to 11.30 am **Keynote -5** Dr. Anand Nayyar Scientist, Vice-Chairman (Research) and Director- IoT and Intelligent Systems Lab, School of Computer Science-Duy Tan University " Metaverse in Multidiciplinary Applications and its Perspectives" Venue: F-203 (Online Mode)		
11.30 am - 1.30 pm Technical Sessions - Track 7,8,9		
Topic: (Online) Artificial Intelligence, Fuzzy Systems Chairperson: Dr. G. sudha Sadasivam Co-Chairperson:Dr. C. Kavitha Venue:EB Seminar hall Session - Incharge: Mr. J. Prakash	**Topic:** (Online): Cloud Computing, Database Management Systems Chairperson: Dr. G. R. Karpagam Co-Chairperson:Dr. B. Sangeetha Venue: PSG CARE - Seminar Hall Session - Incharge: Ms. M. Manochitra	**Topic:** (Online) Image Processing, Deep Learning, Computer Vision Chairperson: Dr.R. Venkatesan Co-Chairperson:Dr. S. Lovelyn Rose Venue: F- 203 Session - Incharge: Ms.J. Adlene Anusha
Paper ID: Mail-009, Mail-011, Mail-014, Mail-028, Mail-036, PI-00017, PI-00034, PI-00050	**Paper ID**: Mail-005, Mail-010, Mail-038, Mail-042, PI-00030, PI-00033, PI-00043, PI-00059	**Paper ID**: Mail-004, Mail-015, PI-00018, PI-00026, PI-00035, PI-00048, PI-00068
1.30 pm to 2.00 pm – Lunch Break		

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2.00 pm to 3.30 pm **Keynote -6** Dr. Sekar Sriram Associate Director - Client Services Verticurl, Coimbatore “How does AI help in marketing?” Venue: D-Block (GF) Offline Mode
3.45 pm to 4.15 pm **Valedictory** Dr. Sekar Sriram Associate Director - Client Services Verticurl, Coimbatore Venue: D-Block (GF) Offline Mode

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PAPER ID : MAIL-0003

Solving Cold Start Problem in Movie Recommender System

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ABSTRACT - Recommender systems identify user's interests to predict the ratings with the help of information available from other users. Such collaborative filtering systems that recommend the items based on user preferences suffer from lack of availability of data for new users. This is called cold start problem .Our work deals with solving cold start problem in movie recommender system. The movie dataset is represented as a graph as well as Multi map. To solve the cold start problem, rating given by the new user for a single movie is considered. Based on the attributes like genre, director, actor related movies are retrieved and recommended for the new user. Over specialization problem results due to selection of movies belonging to particular genre. Genetic algorithm is used to solve the overspecialization problem by choosing movies belonging to related genres. To overcome cold start and overspecialization problems, movies based on the attribute matching are ranked using similarity measures and movies based on similar user group are ranked using attribute weightage. These movies are then recommended to the new user and also updated in the database..

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PAPER ID : MAIL-004

Survey of Fake Image Synthesis and its Detection

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ABSTRACT — Image synthesis, in recent times, has attracted significant attention of people for both positive and negative reasons. Images can be easily synthesized using various techniques. This paper surveys various techniques for image synthesis as well as its detection in a unique structured manner, to enable a perspective on this iterative phenomenon. The paper describes both advantages and limitationsstarting from simple fake image detection to AI synthesized image detection approaches that are available in the literature.Generative Adversarial Network (GAN) is the trending algorithm for artificial image synthesis, because the faces generated by GAN are highly realistic. As discriminators are already present in the GAN's structure, any attempt to create a distinguisher that detects fake images synthesized by GAN's needs to structure itself to detect all existing patterns of fake image synthesis including that of GAN.

KEYWORDS - *GAN, Deepfake, CNN, Deep Learning, Fake face detection*

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PAPER ID : MAIL-005

Spoken Digit Classification Using Deep Learning Algorithm

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ABSTRACT - The deep learning technique uses speech recognition in many different applications, including voice assistants, voice authentication, audio transcriptions, etc. Children who are dyslexic, blind persons and those with impairments can all benefit from spoken digit recognition. The goal of the paper is to create spoken digit recognition for the categorization of digits from 0 to 9 utilising convolution neural networks and long-short term memory neural networks. With the addition of auto-encoders, the performance of the CNN model is also assessed. Finally, a comparative analysis is to be performed on the performance of the models based on the performance metrics.

KEYWORDS - *Auto Encoders, Convolution Neural Network, Deep learning, Long Short term Memory Neural Network, Spoken digit recognition.*

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PAPER ID : MAIL-0006

Natural Gas Price Prediction using Statistical Models and Deep Learning Models

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ABSTRACT - Natural gas, entitled as methane gas or natural methane gas, is a highly flammable, colorless, odorless gaseous hydrocarbon where ethane and methane form the core. A petroleum resource which is associated with crude oil, burning it results in less emission of carbon which promotes a sustainable environment. To be extremely safe, go ecogreen, reduce dependency on nations for fuel resources, it is even more tactical to forecast the prices of natural gasses in the international market for a time frame. Thus, an ARIMA model is developed initially by using the updated dataset(nasdaq) for the forecast to predict the closing price of the day. The autoregression predicts the upcoming values(closing price) based on then values. Moving Averages play a crucial role in smoothing the time series data. Secondly, the LSTM model is constructed with the same dataframe. LSTM uses recurrent neural networks (RNN). The ideology behind the model is that at times being conscious of recent information to perform the present task. Bidirectional LSTM is also constructed. The Neural Prophet which is built on the top of pytorch is also experimented by means of forecasting. Neural prophet is extensively used by developers for the extension of the framework. The experimental repercussion showed that the proposed models are more efficient in terms of prediction and accuracy of the closing price

KEYWORDS - *ARIMA, LSTM, B-LSTM, Neutral Prophet*

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PAPER ID : MAIL-0007

Ultra short term Forecasting using Ensemble learning approach

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ABSTRACT - Accurate and reliable forecasts are necessary for the long-term, sustainable integration of wind power into the electrical system. There is an increasing need for ultra short- term forecasts due to rising installed capacity and changing energy markets. The results from machine learning techniques are superior than those from conventional physical models(based on weather simulations) since they are completely data- driven and spatiotemporal prediction models. A new forecasting approach based on tree-based algorithms for very short-term (ultra-short term) wind power forecasting for a look–ahead period of 1h, 3h, 6h and 12 h and so on is presented. The proposed approach extracts and incorporates new set of features to the existing features for increasing the forecasting accuracy. The main benefit of the suggested ensemble learning is that it makes the best use of predictions from several models and has the ability to "balance out" the individual errors in a way that improves the accuracy of the final prediction. In this work, tree based regression algorithms are used to increase the forecasting accuracy for wind power output for a Turkish wind farm located in the west of Turkey. For this experiment , family of Gradient boosting machine (GBM)-catBoost, eXtreme Gradient Boosting Machine(XGBoost) and LightGBM algorithms is experimented on various time horizons(30 mins, 1 h,3h,6h,12h etc) to verify the capability of the established model in terms of forecasting accuracy. The Bayesian optimization method is used for hyper parameter tuning . The proposed approach is compared with the machine learning algorithms such as support vector regression , random forest and K-NN. To evaluate the accuracy of the proposed model , RMSE, MAE and SMAPE metrics are used and it is observed that the proposed model is suitable for ultra short term . It performs better for short time horizon with the SMAPE ranging from 5% to 6% and the accuracy remains consistent up to 24 hours and gradually reduces to 15% for higher time horizons. The experiment result reveals that among three Boosting algorithms, XGBM out performs other models and prediction results are close to the actual values for 30 minutes ahead forecasting.

KEYWORDS - *Ultra short term, Regression, Boosting algorithms.*

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PAPER ID : MAIL-009

Implementation of Message Service Queue using Rabbit MQ

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ABSTRACT - A distributed system is a software application that makes use of a collection of protocols to manage the activities of numerous processes running on a communication network so that each part cooperates to finish a single or a condensed number of related tasks. REST API is also integrated into this, making it simple to access online services without the need for additional processing. The server sends a client-side representation of the requested resource whenever a RESTful API is used. Through the open-source message-broker programme RabbitMQ, it is also integrated with microservices. With little developer involvement, the configuration file must automatically network new messaging services that join the distributed system.

KEYWORDS - *Distributed Computing, MOM, Microservices*

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PAPER ID : MAIL-010

Infrastructure Management System

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ABSTRACT - We cannot escape technology, it has improved the quality of life and brought about revolutions in various fields of modern-day society. Technology has reduced the effort and time and increased the efficiency of the production requirements in every field. With the innovation of a particular technology, it becomes part of society and integral to human lives after a point in time. Management of infrastructure manually in any organization or institution is a tedious task. In-order to make the management of infrastructure in courts automated, we have designed our application that maintains each and every detail of all the infrastructure and IT stocks in the courts. We will be able to view the purchase date, warranty period, location of the particular infrastructure in the court. Unique QR code is generated for each furniture and IT stocks to know its details. The Infrastructure Management System (IMS) is touted as a revolution in court management. This application will save time and workload. Notifications will also be generated if the service period is nearing and it would call the service person regarding the repair and service. This System would be really effective and efficient.

KEYWORDS - *Infrastructure Management System, QR code, stocks, court.*

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PAPER ID : MAIL-011

Multimodal Emotion Analysis using Deep Learning Models

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ABSTRACT - Emotions play a significant part in our daily lives, influencing decisions, thinking, attention, prosperity, and human quality of life. Emotions and facial expressions are used to establish communication between people. With the impact of computers on human lives and the mechanization of individual lives, the formation of human-computer interaction (HCI) has become increasingly significant. The desire to improve the relationship between humans and computers is great. Many people believe in this notion, and building a good and beneficial cognitive link between computers and users elicits a positive and productive emotional reaction. Speech can be used to generate this interaction between machines and humans.

KEYWORDS - *CNN, Inception Resnet v2, emotion detection, facial emotions, Bidirectional LSTM, emotion from text, emotion from audio, deep learning.*

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Trend Analysis for Analyzing Market Statistics and Company Specific News Articles

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ABSTRACT - Several studies are being performed for predicting market trends, however it remains a complex problem given the volatile nature of markets. This study aims to perform trend analysis to identify major trends present in the markets, acknowledging their volatile nature, and displaying various outcomes based on their trends for the investor to draw inferences from. The trend analysis is corroborated with sentiment analysis, using new articles to ensure its credibility. Finally, the results are displayed using a self-optimized dashboard which showcases an improvement in performance the longer it is used by the user, and displays a variety of real-time dynamic market analytics for the user to draw insights from.

KEYWORDS - *sentiment-analysis; streamlit; dashboard; trend- analysis*

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PAPER ID : MAIL-013

A review on various Artificial Intelligence (AI) Methods used for Medical Prediction and Analysis

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ABSTRACT - Medical Prediction and analysis include variety oftasks like identifying a disease from a given list of symptoms, analyzing the common pattern behind a particular disease, detecting the trend of diseases and the age group which it commonly affects and so on. Artificial Intelligence (AI)'s predictive techniques enable auto diagnosis and reduces detection errors compared to exclusive human expertise. This paper reviews the various Artificial Intelligence methods including machine learning and deep learning methods that have been proposed by different authors in the last 10 years from January 2010 to December 2020. A detailed analysis on the papers is conducted and inferences have been drawn. This research paper aims to reveal some important insights into current and previous different AI techniques in the medical field used in today's medical research. Finally, we provide some insights regarding the future scope and direction to improve the existing ones.

KEYWORDS - *Medical Prediction and Analysis, trend of disease, Artificial Intelligence (AI), Machine Learning (ML), Deep Learning (DL)*

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PAPER ID : MAIL-014

Automatic Poem Generator using Neural Networks

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ABSTRACT - This paper explains about an AI model where it can generate a poem by scanning a picture. The model aims to bring out abstract human emotions through the machine using AI techniques. With those emotions, we will be versing poems which even a human struggles to express. The end user will be uploading a photo which he/she wishes to convert to a poem. The model will recognise the subject, object and the background, henceforth pen a poem for the same. The machine will be trained with preloaded data, here poems and will exhibit its intelligence by predicting a poem that best suits with the image uploaded. This model follows AI techniques like CNN, RNN and Deep couple visual and poetic embedding systems to configure the poem. Consequently, there are few discriminator tools used to distinguish the foreground and background. We also discussed the application of "Automatic Poem Generator" in various entertainment domains and tried expanding to a greater vision. The paper focuses on implementing the poem generator as one of the filters in applications like snapchat.

KEYWORDS - *Natural language processing, deep learning, multi-adversarial neural networks, and snapchat.*

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PAPER ID : MAIL-015

A Hybrid Optimization Approach Based Classification Of Multiclass Breast Malignancy Diagnosis Of Ultrasound Images Using DCNN And ML Algorithm

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ABSTRACT - Breast cancer is the second most common type of cancer in the world, this is the main reason for cancer death in the women community. The recognition of breast cancer mostly depends on computerized biomedical image analysis like breast ultrasound images. Real-time accurate and robust automatic detection and tracking of anatomical structures while scanning would significantly impact diagnostic and therapeutic procedures to be consistent and efficient. We propose a deep learning framework to automatically identify and track a certain anatomical target structure in ultrasound scans. Breast lesion detection using ultrasound imaging is considered an important step of Computer-Aided Diagnosis systems. There are many advantages to ultrasound imaging, such as safety, convenience, and low cost. To support the diagnosis of clinicians and reduce the load of clinicians, many ultrasounds Computer-Aided Diagnosis (CAD) systems are proposed. Nevertheless, the training of ConvNets needs a huge number of images. To overcome this transfer learning is utilized to extract features from a pretrained network of the ImageNet challenge (ILSVRC) for further classification. We used five famous ConvNets – ResNet, VGG19, VGG16, Xception and MobileNet to this issue over feature extraction and used as input to the Machine Learning (ML) classifier. CNN with SVM approach obtained notable Rank-5 accuracies of 92.54%, 99.62%, 99.12%, 98.99% and 98.72% using ResNet50, VGG16, VGG19, Xception, and MobileNet architectures, respectively. From the experimental results, VGG16 combined with SVM approach outperformed in automated BUSI classification.

KEYWORDS - *Deep learning, Convolutional neural network, Computer-Aided Diagnosis, Ultrasound Image, Deep Neural Networks, Image reconstruction, Machine Learning, Transfer Learning*

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PAPER ID : MAIL-016

Mouse Cursor Control with Eye Movement using Machine Learning for Physically Challenged.

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ABSTRACT - A physically challenged person finds it very challenging to control the mouse. We proposed a system which utilizes eye movements to control the mouse cursor as an answer for individuals who can't utilize a mouse genuinely. Eye gaze is a PC access technique that utilizes eye movements to control the mouse. For the people who find touchscreens and mice blocked off, eye stare is an elective technique for permitting a client to work their PC utilizing the development of their eyes. Eye development is viewed as a basic ongoing info mechanism for Human Computer Interaction (HCI), especially for individuals who are physically challenged. In this system, an original eye control framework is proposed utilizing a Webcam and no extra equipment to work on the dependability, versatility, and ease of use of the eye tracking technique in HCI. The proposed system is intended to give a basic and helpful interactive mode that is completely reliant upon the user's vision. The proposed framework's use stream has been carefully intended to impersonate human regular propensities. The proposed framework portrays how to carry out iris and cursor development considering iris position, which can be utilized to control the cursor on the screen with a webcam and Python.

KEYWORDS - *Human Computer Interaction, Eye Movement Tracking, Physically Challenged, Machine Learning, Mouse Control.*

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PAPER ID : MAIL-017

Skin Cancer Prediction using Enhanced Genetic Algorithm with Extreme Learning Machine

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ABSTRACT - In the current scenario, the death rate due to the cause of skin cancer is increasing enormously. Diagnosis and prediction of Skin Cancer (SC) have become vital at an earlier stage. The main objective of this research is ensemble machine learning with enhanced genetic algorithm technique to achieve higher accuracy in the prediction of skin cancer at an earlier stage compared to other existing techniques. Although many machine learning and deep learning approaches implemented in detecting skin cancer at an earlier stage still there are few limitations. To overcome these problems in our propose work, the CNN model, ResNet-16 usually produces successful results in extracting the features automatically and classifying the images very accurately. Therefore, the ResNet model used in our work obtains the deep features with the help of a fully connected layer. Later the feature selection is performed with the help of an Enhanced Genetic Algorithm (EGA) that produces optimized solutions by implementing operations like mutations, crossover, and ensemble with Extreme Learning Machine (EGA-ELM) to classify the images as either melanoma or non-melanoma. The proposed model certainly achieved higher accuracy and effective performance. Finally, the obtained results are to be compared with other popular classifying algorithms like Support Vector Machine (SVM) and various other models.

KEYWORDS - *Skin Cancer, Genetic Algorithm Extreme Learning Machine (ELM), CNN, Optimization.*

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PAPER ID : MAIL-018

Student Academics and Placement Forecaster

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ABSTRACT - Everything is becoming digitalized nowadays but there is no existing system that analyzes and predicts the placement performance of the student. There is need to provide a readiness score for each of the student to know his placement eligibility. The proposed system would identify the student's weak points and generates the graphical reports makes us to visualize and understand. This system analyses student's internal marks and previous semester marks and his/her performance in aptitude tests and technical tests and predicts the readiness with utmost accuracy. This data analysis and prediction helps the teachers to identify the students who need additional support and special guidance and gives awareness to the students about their own performance. Data mining techniques are used to analyse and predict the student's performance and eligibility for them to appear in the placements. It also facilitates effective storing and modification of data by people who has to access the data. The user can convert the data into his/her desired format.

KEYWORDS - *Prediction, Readiness Score, Data Analysis, Data Mining, visualize*

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PAPER ID : MAIL-019

IOT Based Solar Energy Management for Smart Home Application

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ABSTRACT - Accurately determining energy utilization in a building is a vital requirement in accomplishing the objective of minimizing energy demand, in order to enhance energy efficiency. To implement this, numerous tactics and indicators has been proposed to screen and measure energy utilization in homes. This proposed work focuses on the temperature of the location of the residual building and helps the registered user's by suggesting them to have Solar PV System based on their home appliances load in a first part. Later, the system supports in providing the efficient plan for the user's by suggesting them to use energy in an optimal level. Based on the temperature tracked in the location where the user's live suggestions are made to go with the normal EB or with Solar energy. Thus, the energy used from both can be saved at right time and in right mode. Thus, it enables the energy system of the home to be utilized in an optimal level.

KEYWORDS - *ThinkSpeak, Solar Panel, Battery capacity, Inverter Sizing, Energy efficient framework.*

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PAPER ID : MAIL-020

Assisting Visually Impaired Person in Detecting and verification of Indian Currency after demonetization using MATLAB

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ABSTRACT - Currency values, its printing version and styles are changing frequently these days along with the upgrading economic growth of a country. Therefore, many visually impaired citizens find it exceedingly difficult to understand the new currency types and its value. Our overall aim is to solve these problems. For that technology like Digital Image Processing in our application to make this solution more automatic and robust. Also, this application is going to follow the following practices during the implementation of this application like image processing, image segmentation, edge detection, and character recognition and extraction. The result after all this process will be verified with MATLAB software. For this, it is going to use 100-, 200-, 500- and 2000-rupees photo as sample set.

KEYWORDS - *Digital Image Processing, image segmentation, Edge detection, Character recognition and Character extraction.*

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PAPER ID : MAIL-021

Mobile Tourism Recommendation System for Visually Disabled

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ABSTRACT - Mobile Tourism Recommendation System to a tourist is the best attractions in a particular place according to his preferences, his profile and his admiration to previous visited places. First, a list of the city places that are likely of interest to the user is offered by a Recommender system. This list estimates the user demographic classification, the user likes in former trips and the preferences for the current visit. Second, a planning module schedules the list of recommended places according to their secular characteristics as well as the user limitations; that is the planning system decides how and when to perform the recommended activities. For implementing these recommender methods, we have applied different machine learning algorithms which are the K-nearest neighbors (K-NN) for both Clean Boot (CB) and Consolidation Function (CF) and the decision tree for all Data Framing (DF). Thus, execution of recommendation system for Tourists helps them user friendly planning. It is also useful for blind people. This application provides complete voice assistance for easy navigation, via simple button click. Both vibratory and voice feedbacks are provided for accurate crash alert for the visually challenged. Here the application extracts its smartness by incorporating Android and Internet of Things (IOT) support. Since blind support applications and devices are more cost and many blinds can't afford it, we have aim to put forth a novel, low cost and reliable approach to help the blind to explore their possibilities and power of smart phone technology in navigation. We additionally expect to find the dormant variables that should be tended to, food, tidiness, and opening times and suggest a traveler place dependent on client history information. In this investigation, we propose a cross planning table methodology dependent on the area's prevalence, appraisals, idle points, and conclusions. A target work for proposal streamlining is defined dependent on these mappings. The gauge calculations are inactive Dirichlet Allotment (LDA) furthermore, Support Vector Machine (SVM). Our outcomes show that the consolidated highlights of LDA, SVM, appraisals, and cross mappings are helpful for upgraded execution. The fundamental inspiration of this study was to help vacationer businesses to coordinate more consideration towards planning viable special exercises for under-underscored area.

KEYWORDS *- Requirement Portal, Hybrid Recommendation System, Personalized Recommendation System, Deep map, KNN Algorithm, Ultrasonic sensor.*

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PAPER ID : MAIL-023

iNSTA-DELiVERY - Fast delivery at your location

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ABSTRACT - There are many E-commerce websites and applications all over the world to order and deliver a desired product. But it takes several days according to the product and availability of the product to reach our hands. There is need of buying the product and using it on time. By featuring a platform to order and get the product on desired time, we can lower the waiting time for the product and deliver the product for its use next few hours .In case of immediate use or emergency of a product, we can't order those things in these e-commerce websites. Here we connect people with local stores and sellers to buy a product. The user can search for product that they want for immediate use through the platform either product wise or according towell known local stores by the user. User can not only order but they can choose stores to order their products. After placing the order the delivery boy picks up the order from the local stores the reaches your location and delivers the product within the hours. Here both local sellers and people gets benefits where local seller can sell lots of products in this platform and people can benefited by not waiting much for the product to get delivered.

KEYWORDS *- Instant Delivery, Connecting people with their local stores, Online Shopping*

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PAPER ID : MAIL-024

Home Food Delivery System

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ABSTARCT - But these websites are missing out features of food customization and authentic traditional taste of the home foods. So the main motive is to connect the customers and house cooks who love to cook for passion or doing it like a job. The enrolment is done for the cooks in the application by doing a safety check and a check for the standard of food that they going to make. The condition makes quite uncomfortable for people suffering from ulcers, people prefer home foods, constipation patients so this kind of people require lot of customization in food, Our aim is to solve this problem by searching nearby home food makers, independent cooks, nearby small kitchen start-up which could provide a customized food as requested are connected with customer and customer could communicate directly with cook and could customize their food.

KEYWORDS *- Home Food, Interaction, Customization*

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PAPER ID : MAIL-025

Ancient Tamil Character Recognition from Epigraphical Inscription using Deep Learning Techniques

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ABSTRACT - Tamil is one among most traditional languages especially found on the southern regions of India. Recognizing a non-digitalized character in Tamil is a very difficult process because of its large and compound character set. This paper describes an offline Tamil character recognition approach using Convolutional Neural Network (CNN). There are totally 256 characters available in Tamil language. The main problem associated in identifying a character is their similarity in representation i.e most of the letters are almost similar to each other and only a slight change can be seen especially at the end for most of the characters, so recognizing a particular character is quite difficult and require high training for distinguishing each and every character. The system architecture explains the CNN layers and the difficulty in gaining the digitalized character from the CNN Layer using deep learning. This involves the data set training and pre-processing of all the Tamil characters.

KEYWORDS *- Convolutional Neural Network, Tamil character recognition, Epigraphical recognition system, image processing, Deep learning*

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PAPER ID : MAIL-026

Security and Privacy Aspects of Mobile IP and Its Protection using Bot Technology

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ABSTRACT - Mobile has become one of the most important gadget in the modern era which enables us to connect all over the world. It is important for many businesses and connecting relationships across globe. The advantages of mobile phones came with disadvantages as well. The Mobile IP is used to connect to network without any disconnection unlike the portable computing such as PC where computer's point of attachment is changes when point of attachment. This paper discusses about the security aspects in Mobile and Mobile IP and proposes various solutions which can be implemented via a Chatbot.

KEYWORDS *- Mobile IP, Security, Cryptography, Firewall, Chatbot.*

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PAPER ID : MAIL-027

Privacy Preserving Data Publishing using Slicing Technique

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ABSTRACT - Information sharing is one of the major concerns in computing era. While sharing and accessing the information there are chances for leakage of information which requires privacy preservation. Several techniques exist for privacy preservation which is regarded as the strong measure for information disclosure and to protect individual privacy. Though techniques such as generalization and suppression protect individual privacy, generalization cannot be applied for high dimensional data and suppression cannot be applied when there is no clear separation between quasi identifier and sensitive attribute. Based on the drawback in generalization and suppression technique, this work proposes an enhanced Slicing technique for privacy preservation. Slicing is a technique, which partition data both horizontally and vertically. Slicing has better data utility than generalization. Sliced table obey I-diversity value and thus it can be prevent membership disclosure and attribute disclosure. Slicing can also handle high dimensional data when compared with generalization and suppression. Health care application has been taken as a case study to apply the proposed slicing technique.

KEYWORDS *– privacy preserving, quasi identifier, sensitive attribute, I-diversity*

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PAPER ID : MAIL-028

Virtual Musical Instruments with Python and OpenCV

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ABSTARCT - There is a rising need for musical aspirants/beginners to have access to cheaper musical instruments. In this paper, we explore the opportunities to utilize image recognition algorithms via OpenCV to port this technology into readily available modern devices, which will enable inexpensive yet authentic methods of playing a piano. Through OpenCV and Pygame libraries, one can set up a rigid camera that will trace the player's fingers. The fingers if they cross or hover over a specific coordinate of a key, note (.wav file) will be played by Pygame's mixer module. This simple yet inexpensive option might help first time musical aspirants experience music by increasing affordability and accessibility. This paper also explores the future scope of enhancing the project to accommodate other musical instruments.

KEYWORDS *- Python, OpenCV, Pygame, Image Recognition, Piano, Music, HSV, RGB*

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ABSTRACT - The Data mining and machine learning algorithm for Electrocardiogram signal analysis recognizes the entire characteristic features of diseases. In this work a time series data mining models is introduced for analysis of ECG data for prior identification of heart attacks and probability of incidences. This can greatly help patients to detect the arrhythmia so necessary treatment can be done beforehand cardiac arrest happens. The ECG data sets extracted from Physionet are preprocessed using Min-max normalization so that missing data are fulfilled. A hybrid method combining cascade-Forward NN Classifier and Ant colony optimization is proposed in this paper. The swarm-based intelligence method optimizes the weight adjustment of neural network and enhances the convergence behavior. The primary purpose of this paper is to optimize the NN parameters for narrowing down the convergence with ACO implementation. The combined use of machine learning algorithm with neural network enhances the performance of the system. The performance is evaluated using parameters like True Positive (TP), True Negative (TN), False Positive (FP), and False Negative (FN) respectively. The Improved accuracy of proposed ACO+ cascade-Forward NN Classifier model also raises the speed of the network. In addition, the proposed method uses minimum memory when compared with existing method for processing.

KEYWORDS *- ECG data, cascade-Forward NN, Ant colony optimization, Min-max normalization, machine learning algorithm, Data Mining, Swarm based.*

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PAPER ID : MAIL-030

Leveraging Detection Of Data Breaches By Applying Snowball Sampling

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ABSTRACT - With the data being circulated and stored on the internet increasing, the number of data breaches occurring globally has seen a drastic rise and it is happening in an organized manner. This possess a serious threat to both individual and organizations. Though the organizations have a security team to monitor the breaches, the individuals are unaware that their data being breached is a serious issue. This paper addresses the above issue through detection using snowball sampling and preserving privacy using Blockchain technology. Efforts have been taken to validate this system through threat modelling by employing misuse case diagrams and attack trees.

KEYWORDS *- Data Breach, Snowball Sampling, Blockchain, Attack Tree, Web Scraping*

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PAPER ID : MAIL-031

A Critical Review on Location Based Hybrid Filtering Recommender systems

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ABSTRACT - A recommender system, or a recommendation system is a subclass of information filtering system that provide suggestions for items that are most pertinent to a particular user. Typically, the suggestions refer to various decision-making processes, such as what product to purchase, what music to listen to, or what online news to read. Tourism is a social phenomenon where people voluntarily travel looking for entertainment, relaxation, culture or health. But, online information continues to grow at an exponential rate, users are often frustrated by how difficult it is to locate the right information easily. This problem is called information overload. This is where the recommendation system comes into play which helps in solving the information overload problem. The hybrid systems aim to overcome the drawbacks of each location based recommendation approach that are used separately and mostly the cold start problem. Moreover, these systems try to find the best combination of the various approaches in order to increase the accuracy of prediction. Thus, the hybrid recommendation method solves the challenges like 'cold start problem', inability to capture changes in user behaviour, sparsity and selecting correct choices for users. This paper explores the hybrid recommendation systems and other filtering techniques used in various fields, their challenges, how they can also be used for tourism recommender systems based on the longitudes and latitudes.

KEYWORDS *- Information Overload, Cold Start, Content-Based, Collaborative Filtering, Weighted Hybrid, Switching Hybrid, Demographic Filtering.*

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PAPER ID : MAIL-032

Smart Attendance Tracking Using Deep Learning - A Step Ahead To Improve Teaching Learning Process

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ABSTRACT - The conventional method of attendance tracking consumes more time and there is always a chance for proxying and missing of attendance. With the advent of disruptive technologies, face recognition (selfie) based attendance tracking system is one of the promising candidate to address the above issue further the emotions captured from the selfie can be used to improve effectiveness of class interaction. Efforts are being taken to apply CNN algorithm for image recognition and emotional analysis in which RESNET architecture is used for improving the robustness of the model. This paper focuses on smart attendance tracking, emotional analysis. The experimental results reveal an accuracy of 79.52% and a precision of 73.95%.

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Automated Water Level Monitoring System using Arduino and GSM Module

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ABSTRACT - This paper represents an Internet of Things (IoT) based smart water level monitoring (SWLM) system that aids in continuous measurement of water levels. An ultrasonic sensor is connected with an Arduino-UNO in a discrete way to detect the water levels. Extracted data from the sensors are transmitted to a mobile application developed via flutter and the data is stored in a cloud platform (ThingSpeak). Based on the measured result, the proposed SWLM system can successfully analyze the water levels and display the ATMs categorically according to the water level percentage. This paper clearly explains how the hardware components are connected to the application, which retrieves the real-time data from the cloud application (Thingspeak). Furthermore, this paper also details on a working prototype that, when expanded, will cater to the needs of an important hill station in Tamil Nadu, India. An application has also been developed for the same.

KEYWORDS *- Automation, Arduino, GSM Module, Ultrasonic Sensor, Internet of Things, ThingSpeak, Sensors*

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PAPER ID : MAIL-034

Sentiment analysis in software product reviews using Deep convolution neural network

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ABSTRACT - Sentiment Analysis is an ongoing field of research in text mining that helps to find public's opinion, emotion, etc. towards an individual, event or topic. With software engineering perspective, sentiment analysis was applied to study the issue comments from the JIRA tracking system and to identify the emotion variations in software engineering using commit messages of GitHub. The software engineering studies used the following existing sentiment polarity tools: SentiWordNet, NLTK, SENTISTRENGTH, Alchemy API, Stanford API. These tools are well trained on product review, movie review and for similar review of various products on non-software engineering texts. This normally misidentifies the polarity of a sentiment in software engineering artifacts because it follows a lexicon based approach. Thus, software engineering context normally end up in nominal accuracy when compared to the test accuracy values. The proposed approach is to use the power of deep learning for sentiment analysis and capture semantic relations among the words. The objective is to perform automatic feature extraction which will help in identifying sentiments without maintaining domain specific lexicons. The experimental results demonstrate the proposed deep learning approach that achieves 4.17% improvement in accuracy over SentiWordnet lexicon based approach and 11.75% improvement in accuracy over machine learning approach.

KEYWORDS *- Sentiment Analysis, Sentiment Lexicon, Machine Learning, Deep Learning, Natural Language Processing.*

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PAPER ID : MAIL-035

Fraudulent Mobile Application Detection In Play Store

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ABSTRACT - Billions of smartphone users enjoy the convenience and entertainment that today's mobile technology offers. The increasing options for different apps, software and technologies make mobile phones an important tool in navigating the modern world. But as the number of smartphone users continues to climb, so is the prevalence of fake apps. Fake behavior is actually most popular in application stores like Apple's application store, Google play store and so forth. The data in the application stores like the rankings, the user ratings, and the user reviews, gives exceptional information to perceive the behavior of the mobile applications. The aim of this paper is to design a Fraud Detection System for detecting fraudulent mobile applications in Play Store which investigates review based evidence, rating based evidence and ranking based evidence for fraud detection after which the boolean score from each evidence is aggregated to arrive at the conclusion of whether the app is Genuine or Fraudulent. The review based evidence is investigated by using Fuzzy Sentiment Analysis, the rating based evidence is investigated by analyzing the average rating pattern using a rating fraud detection algorithm and the ranking based evidence is investigated by analyzing the ranking pattern using a ranking fraud detection algorithm. The results of the developed system for fraudulent mobile application detection achieved an accuracy of around 80%. By deploying the system, the detection of fraudulent mobile applications would be trouble-free and uncomplicated.

KEYWORDS *- Application rankings, user ratings, user reviews, leading sessions, leading events, sentiment analysis.*

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PAPER ID : MAIL-036

Image Captioning in Tamil Language Using Encoder- Decoder Architecture

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ABSTRACT - Image captioning is referred as the process of describing the features of an image using distinct and meaningful words. This feature has a wide range of applications in social media applications such as Face book and Instagram and in video streaming platforms such as YouTube and Netflix, where the need for describing an image or a video with words is evident. Captioning images is also one of the most desired features in the next generation of Artificial Intelligence systems. It has huge applications in the Deep Learning domain. Much research is actively being done on image captioning, which can solve a good deal of real time problems such as the need for a system that can aid visually disabled people, creating effective captions that can be incorporated in self-driving vehicles, etc. This elaborate yet useful feature can be incorporated with the help of various technical concepts such as Natural Language Processing (NLP), Computer vision, Image Processing, etc. The image captioning feature has already been attempted on English language and with the help of extensive researches and technical advancements, these attempts have been fruitful and successful. Nowadays, we have many applications and models based on image captioning of English language. This has paved a path for further advancements in this domain. Many researches are now being undertaken to incorporate this highly useful feature with non-English languages. English being the native language for a relatively smaller proportion of people, it would be really helpful for people with non-English languages as their native language to get their images captioned in the language of their choice. This paper focuses on image captioning in Tamil language and its underlying methodology and architecture. Along with these, the paper also includes experiments related to this with help of an image captioning model which uses a combination of Convolution Neural Network (CNN) and Long-Short Term Memory (LSTM) models.

KEYWORDS *- Image Captioning in Tamil, Convolution Neural Network (CNN), Long-Short Term Memory (LSTM), Natural Language Processing (NLP), Computer Vision, Image Processing, Artificial Intelligence, Deep Learning*

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PAPER ID : MAIL-037

Leveraging Task Scheduling by Adaptive Butterfly Optimization Algorithm

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ABSTRACT - Cloud computing facilitates the effective usage of accessible resources by the virtualization technology where the distinct consumers share those physical resources. In the present work, adaptive butterfly optimization algorithm (ABOA) which belongs to swarm optimization, applied for confronting the task scheduling problem. With butterfly optimization algorithm (BOA), in the initial stages of working, it congregates to sub- optimum elucidations owing to the loss of multiplicity in its population. The sensory modality is the crucial constraint liable for obtaining solutions in the proximate regions. Here, the proposed ABOA for task scheduling is an innovative approach by altering the sensory modality parameter of traditional algorithm to obtain precise solutions. The implementation of ABOA for task scheduling problem might not be observed in the prior research works. From the simulation outcomes and the comparison with other contemporary optimization algorithm, an ABOA substantiated its capability for confronting the task scheduling problem.

KEYWORDS *- Energy consumption; cloud computing; task scheduling; swarm intelligence; bio-inspired algorithm; adaptive butterfly optimization algorithm.*

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PAPER ID : MAIL-038

Ensuring High Availability of HDFS by Forming a Distributed Cluster of NameNodes

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ABSTRACT - Hadoop framework is extensively used for handling large amounts of data. Hadoop Distributed File System (HDFS) is used by Hadoop for storing data in a distributed manner and for efficiently processing it. Failure of HDFS may occur due to several reasons such as disk, rack or NameNode failure. NameNode is traditionally considered as the Single Point of Failure (SPOF) as it is the single master node where the metadata is stored. The entire cluster would go down if the NameNode fails. But, the resulting downtime can't be sustained in critical applications. HDFS should hence be highly fault- tolerant. Various architectural changes were made for this across the different versions of Hadoop. In this paper, the proposed system is to form a distributed cluster of NameNodes to handle the issue of the high availability of HDFS.

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PAPER ID : MAIL-039

A Framework for Smart CSS

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ABSTRACT - Cascading Style sheet (CSS) has been an integral part of all the websites that we visit in our day-to-day life. Thanks to that, we have reached a state of developing masterly crafted websites which are more or less similar to the graphics seen in films. It brings to a point of creating the most optimal and developer-friendly CSS framework. This paper aims to describe the features and discuss the working of such a framework. There are many popular and established libraries that are used by the current frontend developers and this paper compares those libraries towards a better framework.

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PAPER ID: MAIL-040

Leveraging Affective Computing using Multimodal Emotion Analysis - Critical Survey

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ABSTRACT - Affective computing is a multidisciplinary field that is gaining significance growth. Emotion analysis is one of the fast growing technologies that effectively leverages affective computing. Various modalities are available to analyse human emotions. Most of the works are available in either unimodal or bimodal to achieve emotion analysis. Multimodal (video, audio, image, text) emotion analysis ads much advantage for being more effective than any unimodal or bimodal. There are various models available to implement emotion analysis for each mode say audio, video, text and images separately. The objective of this paper is to provide a critical survey of levels of emotion analysis, datasets, models for each modality and the working of emotion analysis using multimodal. Further an attempt is made in developing a conceptual architecture design to implement multimodal emotion analysis.

KEYWORDS *– Affective Computing, Multimodal Emotion Analysis, audio, video, text, image, CNN, RNN, SVM, Naive based, BI-LSTM, HMM*

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PAPER ID: MAIL-041

Fifth Generation (5G) Wireless Technology

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ABSTRACT – After the uprise of 4G wireless mobile technology takes place;researchers, mobile operator industries representative, academic institutions have started to look into the advancement(technological) towards 5G communication networks due to some main demands that are meliorated data rates, better capacity. minimized latency,and better QoS(Quality of Service).To established the 5G mobile infrastructure manufacturers, academia and international mobile network operators have been introduced recently. Nevertheless, 5G mobile services to be made available for use, their architecture ,and their performance have not been evidently expliated. In this paper , we represent thorough overview of 5G the next generation mobile technology. We mainly throw light on 5G network architecture,5G radiospectrum ,ultradense radio access networks,(UDRAN),cognitive radio(CR),software defined radio(SDR),software defined networking(SDN),mixed infrastructure, and 5G network impact on society.

KEYWORDS*- 5G,Cognitive Radio(CR),5G radio spectrum, Traffic offloading of mobile ,FBMC*

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Breast Cancer Prediction Using Machine Learning Algorithms

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ABS TRACT— Breast cancer is one of the major diseases that occurs in all over the world. The unusual growth of tissues is called cancer cell. It divides rapidly and also it multiplies rapidly and it causes deaths especially for women. Breast cancer is one of the major diseases that especially occurs for women all over the world. In this paper the breast cancer was predicted using the processes like linear regression, logistic regression, decision tree, naïve bayes and support vector machine and random forest. The accuracy of the number of patients those are affected by the breast cancer is predicted using such algorithms. The random forest method shows largest accuracy values compared to other techniques.

KEYWORDS— *Breast cancer, SVM, classification, efficiency, random forest, naïve bayes*

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PAPER ID: MAIL-043

Making Internet of Things Real

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ABSTRACT - The Internet of Things (IoT) is driving the next wave of innovation in both business models and technology. While the IoT revolution, as it is being called, promises to be a major driver of economic activity and many businesses are coming onboard, if it is not approached with both business and technology perspectives together, the desired outcomes may not always be achieved. In this article we take a fresh look at IoT as a business revolution driven by technology. Our key contribution is the definition of business and technology drivers that need to be considered when choices are being made for adoption of IoT in a business. We provide case studies of actual businesses who have successfully transformed themselves into IoT-based businesses, and we provide examples of key business and technology drivers considered by them

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PAPER ID : PI-00010

Classification And Identification Of Cardiac Arrhythmia

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ABSTRACT - Cardiac arrhythmia is a condition in which the heartbeat is irregular and can be excessively rapid, too slow, or unstable. Many machine learning algorithms have been developed. Effectively used to classify various forms of heart disease arrhythmia. Design of an intelligent system using ECG data. The use of technology to detect cardiac arrhythmias is being studied. This is offered as a name for the arrhythmia detection method that includes data pre-processing, extraction, and analysis steps. Features are categorized. In the paper, to reduce the size of input space feature extraction methods like Random forest are used. The aim of this analysis is to find a smaller space in which the classifier can successfully perform the function. After the extraction of the features, the Decision tree, K-Nearest Neighbor (KNN), Support Vector Machine (SVM), Logistic Regression, and Naive Bayes Classifier are used for classification. purposes. The proposed algorithms were applied and estimated using the UCI ECG dataset. The proposed approach has provided an attractive accuracy of classification.

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Diabetic Retinopathy: Historical and Current

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ABSTRACT - Diabetes is a chronic disease that affects several organs of the human body, including the retina. DiabetesMellitus (DM) causes diabetic retinopathy (DR) (DM). Various machine learning algorithms have been used in the literature to identify DR. Both Feature extraction and Classification are steps in this process. The numerous methods for diagnosing DR based on characteristics such blood vessels, microaneurysms, haemorrhages, etc. are reviewed in this work. The majority of the investigations utilised retinal fundus images, which were obtained with a fundus camera. This review divides the detection of DR into two methods: segmenting blood arteries and identifying lesions. The experimental findings of different machine learning techniques are compared in this research based on variables including sensitivity, specificity, area under the curve (AUC), and accuracy.

KEYWORDS *- Diabetic retinopathy, Blood vessels segmentation, Digital fundus images, Lesions* **.**

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Micro Level Dimensionality Measurement for Product Inspection using Machine Vision

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ABSTRACT - The incorporation of AI in the manufacturing industry has improved the efficiency and safety of its operations, thereby reducing labor hardships. In order to facilitate automatic visual inspection of the objects that are manufactured daily, Machine Vision is used after the process of manufacturing. With the advancement in AI, it is possible to embed new processing units in the camera that can perform tasks that required dedicated servers earlier, with the aid of Deep Learning. In this work, our aim is to measure the geometric structure of screws and to identify the defects present in them. Finally, our results infer that irrespective of the micro-level objects it outperforms the state-of-the-art method with our novel photogrammetry approach which can be implemented in any industrial setup for the quality inspections of valves, engine spares, etc. at the micro level

KEYWORDS - *Machine vision, Deep Learning, Photogrammetry, Micro level inspection, Defect detection, SubPixel processing, Image enhancement.*

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Automated Template Matching for External Thread Surface Defects with Image Processing

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ABSTRACT- Artificial Intelligence is a fast-growing domain that facilitates the innovation in various fields of business and manufacturing industries. This field of Machine learning provides the automatic inspection of the manufactured products for the detection of dimensionality measurement of the products. Human visual inspection on finding imperfect dimensions at micro level scratches, dents and quantification variations of engine valve are prone to errors. Here, we propose complete automation to find conventional dimension variations of the product with the traditional machine vision algorithms. Two approaches are adopted here for Edge detection for dimension measurement from the pixel processing and template matching for the identification of deviations for the anomaly detection in the product. As a result, a new automation technique is obtained, that will be used at various levels of quality inspections for the dimensions measurement.

KEYWORDS *- Template matching, surface defects, machine vision, edge detection.*

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PAPER ID : PI-00025

Analysis And Implementation Of 3-D Transpositional Cipher Algorithm Based On Rubik's Cube Mechanism

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ABSTRACT - Encryption algorithms assist in the process of transforming plain text into encrypted text, and then back to plain text for the purpose of securing electronic data when it is transported over networks. This is seen as a necessary part in data transmission since confidentiality and data privacy is an important factor. Different encryption algorithms are having different complexities, speed of execution and degree of security. The Advanced Encryption Standard (AES) is the algorithm trusted as the standard by the U.S. government and many other organizations. The AES algorithm guarantees high security since there is no known public attack that can crack it. Blowfish algorithm on the other hand is very fast but less secure. The encryption algorithms in the average zone of these two algorithms will be quite highly useful for transmission of general information between people. Such an algorithm also guarantees good amount of speed as well as more security. Non-conventional algorithms such as Rubik's Cube Algorithm is a transpositional cipher and can be thought of a viable option to use them in common applications. These algorithms can be further deepened with the help of more complex key generation part that can be done to enhance the security of the data

KEYWORDS *- AES, DES, Rubik Cube Algorithm, FCM*

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An Efficient Way of Anomaly Detection for Insider Threats Using ArcSight Intelligence

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ABSTRACT - Insider threats are people with legitimate access to your network who use their access in a way that causes harm to the organization. Insider threats can be difficult to detect most cases go unnoticed for months or years. Whether the insider is a malicious employee or a contractor with compromised credentials, security teams need to quickly and accurately detect, investigate and respond to these potentially damaging attacks. Insider threat represents a major cybersecurity challenge to companies, organizations, and government agencies. Insider threat detection involves many challenges, including unbalanced data, limited ground truth, and possible user behavior change. This paper suggested ArcSight Intelligence powered by unsupervised machine learning is a user and entity behavioral analytics solution that uses data science and advanced analytics to identify the top risky entities and behaviors occurring in your organization. Using your organization's data, Intelligence first establishes the normal behavior for your organizational entities and then using advanced analytics, it identifies the anomalous behaviors that constitute potential risks such as compromised accounts, insider threats, or other cyber threats.

KEYWORDS *- cloud computing, insiders threat detection, anomaly detection, unsupervised learning, ArcSight intelligence, security*

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PAPER ID : PI-00027

LMI based PI controller design for a multivariable system with high-performance tracking for non-minimum phase

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ABSTRACT - This study provides a modified Linear Matrix In-equality tuneful PI controller to manage the multivariable process and maintain the liquid level system. The proposed method works by converting the PI is changed into state feedback, then the problem is determined using the convex optimization problem. The controller synthesis is reduced to an equivalent static output feedback control problem. Access to model the auto-tuned PI controller to control a class of multivariable systems using ideal decoupler and linear matrix inequality. The quadruple tank system containing flow ratios operates the structure in minimum and non-minimum phase systems.

KEYWORDS *- Linear Matrix Inequality controller, Quadruple tank process, MIMO*

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BEEMA: Braille adapted Enhanced PIN Entry Mechanism using Arrow keys

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ABSTRACT - Persons with visual impairments have often been a soft target for cybercriminals, and they are more susceptible to cyber attacks in the digital environment. The attacks, as mentioned above, are because they are visually/aurally exposed to the other sighted users. Visually impaired computer users suffer from secrecy and privacy issues on digital platforms. This paper proposes a mechanism termed BEEMA(Braille adapted Enhanced PIN Entry Mechanism using Arrow keys) to help people with visual impairments. We have studied various security attacks on visually impaired users and proposed a mechanism named BEEMA that provides a rigid braille-adapted text input for people with visual impairments. This mechanism allows users to enter a PIN number on any website that requires a PIN number. The proposed model is implemented as a browser plugin which can be accessed easily. We have conducted sessions with visually impaired users to study the mechanism's performance. The proposed BEEMA model has shown encouraging results in the user study. Resilience of BEEMA against various attacks is also explored in this paper.

KEYWORDS *- PIN entry, visually impaired, accessible authen-tication, shoulder surfing, key logging, Persons with disabilities*

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PAPER ID : PI-00033

2D And 3D Palm Print Recognition

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ABSTRACT - Biometrics are a way to measure a person's physical characteristics to verify their identity. These can include physiological traits, such as fingerprints, palmprints, eyes or behavioral characteristics for a security authentication. Among these physiological traits, palmprint is a very unique and distinctive biometric trait since ridges and lines in the palm are a set of unique biometric identifiers. And palms are so much bigger than fingers, palm prints have on average thousand identifying characteristics, while the average fingerprint has just a hundred. A clear majority of the research on palm-prints are concentrated on 2-D palm print images irrespective of the fact that the human palm is a 3D-surface. While 2-D palm print recognition has proved to be efficient in terms of verification rate, it has some essential downsides such as the large section of the palm is hard pressed on the scanner surface during 2-D based acquisition which can adversely affect the performance and robustness of the palm print recognition system. One of the efficient solutions for the above problems would be using the 3D palmprint image where a large number of unique biometric identifiers can be found. So, the deep learning model such as ResNet50 and Inception ResNet v2 architectures can be trained with the PolyU II, CASIA, IITD databases which consist of 2D and 3D images to increase the accuracy.

KEYWORDS - *Biometrics, CNN, palmprints, ResNet50, Inception ResNet v2.*

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A Comprehensive Study on Speech Recognition Technology

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ABSTRACT - Speech recognition is a method that enables computers to recognize the human voice from speech signals automatically using intelligent algorithms. With the ultimate goal of achieving natural language communication between humans and machines, it integrates various domains of physiology, psychology, linguistics, computer science, biometric authentication systems, voice-controlled automation systems, and signal processing. Speech preprocessing, feature extraction, and speech classification are the three main phases of speech recognition. The numerous feature extraction and classification techniques used in voice recognition systems are reviewed in this paper's body of literature.

KEYWORDS - *Speech recognition, Speech Feature Extraction, Speech Classification, speed signals, techniques, algorithm.*

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Image Captioning Generator and Comparison Study

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ABSTRACT - Image caption generation has long sparked the interest of researchers in the Artificial Intelligence division. The ability to train a system to adequately represent a visual or an environment in which humans have extensive applications in robotic vision, management, and many other fields. This paper aims to compare different transfer learning techniques and develop a novel architecture to improve image captioning accuracy. We compute image feature vectors using different state-of-the-art transfer learning models which are fed into an Encoder-Decoder transformer network based on attention mechanism to improve the object relatedness. We have also compared the models on benchmark datasets like MS-COCO with the evaluation metrics Bilingual Evaluation Understudy (BLEU).

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Driver fatigue identification & Parkinson's disease diagnosis using LabVIEW

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ABSTRACT - Drivers should always be attentive to the traffic on the road. It is important that the driver should not be subjected to fatigue because when the driver is tired, he may drive rashly and consequently, it may lead to an accident. Accidents may cause severe injuries and even death. In this paper, an idea to alert the driver about his fatigue and safeguard him from an impending danger. The driver fatigue detection system uses reflectance of infrared pulses to monitor eye movements of the driver which would help to alert the driver who is drowsy and hence prevent any mishaps.

KEYWORDS *- Driver fatigue, accident prevention, EEG, LabVIEW*

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PAPER ID : PI-00042

An Intellectual Decision System for Classification of Mental Health Illness on Social Media using Computational Intelligence Approach

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ABSTRACT - According to the survey, from the last decade, a significant increase of social media implications have been observed in the context of health. The emergence of social media has allowed people to express their feelings on products, services, films, etc,...In this point, we can say that social media has an influence over the feelings which is the user's view or attitude towards any topic, object, event, or service. From this case, we can infer that the feelings have always influenced people's decision-making. From recent years, emotions have been analyzed intensively in natural language, but many problems still have to be watched. Here, one of the most important problems is the lack of precise classification resources. So far, most of the research about the feeling gradation is concerned with the issue of polarity grading, although, in many practical applications, this relatively grounded feeling measure is insufficient. Design methods are therefore essential, which can accurately classify feelings into a natural language. The prediction of mental health from any individual's social media posts and comments is one of the encroachments. As social media plays a role as a great source of communication and interaction between people, where they share their opinions and thoughts with each other, which in turn reflect their feelings, moods and sentiments. Hence, their mood and emotions from their posts and comments can be classified using machine learning and computational intelligence algorithms. Here, methodology is proposed for the identification of the mental illness of a patient via their communication on the social media networks.

KEYWORDS - *Natural language processing, deep learning, multi-adversarial neural networks, and snapchat.*

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Secure Patient Monitoring and Attack Detection Framework for Healthcare IoT using Fuzzy Rules and ELUS-BiLSTM

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ABSTRACT - The paradigms of providing health-centric services have transformed extremely with the enhancement along with innovations in mobile and wireless communication technologies subsuming the Internet of Things (IoT). Owing to the rapidly increasing attack, the doctors were not provided with an accurate alerting message by the prevailing health monitoring system. Thus, by utilizing the Exponential Linear activation Units-centered Bidirectional Long Short Term Memory (ELUS-BiLSTM) technique, a novel healthcare monitoring along with an attack detection system is proposed in this work. (i) Attack detection, (ii) Data security, and (iii) Patient health monitoring is the '3' primary phases incorporated in the proposed methodology. Initially, from the patient, the data are collected, and then the features are extracted in the attack detection phase. Next, the features being extracted are inputted to the ELUS-BiLSTM classifier where the data is classified as attacked or non-attacked data. After that, by utilizing Skew Tent Elliptic Curve Advanced Encryption Standard (STECAES), the non-attacked data is encrypted whereas the attacked data is stored in the log file. Lastly, to generate the fuzzy rules, the encrypted data is utilized; subsequently, the alert message is sent to the doctor. The experiential outcomes displayed that when analogized with the prevailing methodologies, the proposed model obtained better outcomes.

KEYWORDS - *ELUS-based Bidirectional Long Short Term Memory (ELUS-BiLSTM), Skew Tent Elliptic Curve Advanced Encryption Standard (STECAES), Fuzzy Rules, Healthcare monitoring, attack detection.*

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Data Crawling and Explicit Data Detection for Websites

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ABSTRACT - From the recent news about the usage of the internet among teenagers and school students, an article posted in "Times of India" about internet pornography and students' addiction to it has increased exponentially. Also, the COVID-19 pandemic has made them more addicted. According to the report from the Internet service provider, internet consumption has increased so much for these unnecessary purposes. Apart from teenagers, there are many people who are addicted to this problem. One of the prime reasons for this is the usage of the internet. They usually come across many advertisements which are unrelated and trigger people. Pornography is not the only thing that is abusing society. Along with it, there exists child abuse and child pornography, women abuse, cyberbullying, etc. To avoid this, we have built a software prototype to differentiate the websites based on the explicit content on the site and block them on the ISP level. We have used data crawlers and machine learning algorithms to fulfill the objective and the outcomes are saved in the database. Our results determine the probability of the explicit content on the sites.

KEYWORDS - *Child pornography, Women abusing, Pandemic, Cyberbullying, Explicit content, data crawlers, machine learning algorithms, database*

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PAPER ID : PI-00047

Motor Vehicle Access using Fingerprint

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ABSTRACT - Password kind of authentication methods is not precise to safeguard ones belongings whether it be touchable or virtual and thus, biometric authentication systems are used. We work on imposing this safety measure in automobiles like bike and bicycle. Thereby theft can be identified and reduced. Fingerprint Based Bike (FPBB) is designed in such a way that user's fingerprint is required to open the valve to insert the key (Fingerprint of 5 users can be authenticated). In case of additional users, passcode can be used to access. FPBB works under the influence of GSM/GPS Technology and vehicle tracking system. The uniqueness of this model is that it gives alert message with location to the user's mobile number when the fingerprint isn't recognized. When the vehicle met with an accident those inbuilt security system passes information to the users and ambulance. Main purpose of this project is to focus on safety measures to the users.

KEYWORDS - *GSM, GPS, Biometric, Security system*

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PAPER ID : PI-00048

Human Activity Recognition using Recurrent Neural Networks

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ABSTRACT - Human Activity Recognition (HAR) is a complex and interesting research topic in computer vision. Through visual surveillance, it monitors human activity in insensitive and public places such as buses and train stations, airports, banks, shopping malls, schools and universities, parking lots, roads, etc. to ensure terrorist attacks, theft, accidents and illegal activities. Parking, vandalism, fighting, breaking chains, crime and other suspicious activities that would later lead to improvements to the City's security system. Monitoring more than a hundred thousand video clips each day and recognizing suspicious actions is time-consuming and a hectic job for a human to do. This is where AI comes into play. It has authorized a lot of applications which are being widely used nowadays. Due to its wide popularity, it has become a popular research topic. The smartphones and smart watches we use every day have several sensors like accelerometers, gyroscope which help to capture human activity. These sensors help us to get some measures like kinetic motion and angular motion of a body and employ them to grasp models which can be considered correctly analyzing the activities to their respective classes. Using data from these, we design a deep neural network model to obtain the high representation of human activity combining both kinetic motion activities and environment features. A few mixtures of activities and sensors depicting motion signals are built into the RNN model. Various Machine Learning models are evaluated. Finally, a survey on deep learning in neural networks in HAR is analyzed and presented.

KEYWORDS - *Human activity recognition, neural networks, sensors, motion.*

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PAPER ID : PI-00050

Impact of Personality Traits on Students' Academic Performance

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ABSTRACT - The goal of education is to help students. When students are moulded in their knowledge, competencies, and attitudes under the effective supervision of educators, the goal of education is achieved. According to Bloom's learning activity hypothesis, a person's learning activity enhances his knowledge and mental skills (cognitive) and his emotional areas (i.e. Affective). The combination of emotional, attitudinal, and behavioural responses that make up a person's personality is defined (i.e. Affective). Being a good personality is more vital, and education aids in the development of a good personality. Educational Data Mining is one of the most popular applications in education. It aids in a better understanding of students' learning activities and their general involvement in them, intending to improve the educational system's quality and productivity. According to Bloom's hypothesis, this research will look into the impact of personality factors on student academic achievement. The pupils' personalities were determined using the Eysenck Personality Inventory and the Criterion Reference Model. Based on supervised and unsupervised methodologies to analyse students' datasets, this work investigates the impact of personality factors on students' learning processes. The Multi-Layer Perceptron and EM Clustering Techniques are used in this study. Multi-Layer Perceptron and EM Clustering Techniques cluster pupils based on their personality and performance. The study uses descriptive and predictive modelling using mapping or function to determine the relationship between students' personality and performance. It demonstrates a link between a student's personality and their academic performance. This research enables educators to comprehend students' Behavioural, Attitudinal, and Emotional Growth as a Personality during the learning activity and provide appropriate training to boost their academic competence.

KEYWORDS **-** *Multi-Layer Perceptron, Expectation Maximization (EM) clustering, Criterion Reference Model, Bloom's Taxonomy, Affective Domain, Eysenck Personality Questionnaire, Personality Types*

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Multi-Objective Dragonfly Optimization Algorithm for Wrapper Based Feature Selection

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ABSTRACT - In machine learning model, feature selection is a vital research topic. Feature selection from a vast number of documents is carried out by sorting the text and reducing the problem dimension. A subset is selected from the training set and is used as a feature. The aim of feature selection is to minimize the number of feature set and maximize the performance accuracy by identifying optimal features. This paper enhances the feature selection process by applying multi-objective dragonfly optimization algorithm for the wrapper based model. Multiple objectives are considered while identifying the optimal feature hence multi-objective metaheuristic optimization algorithms are applied. Multi-objective swarm intelligence algorithms are efficient for solving wrapper based feature selection problem. The proposed technique enhances the performance of classification accuracy by improving the accuracy of the feature selection process. The SVM classifier is used in this research. To measure the performance of the proposed technique benchmark UCI datasets are used. The results show that the MODOA is better than the other single objective optimization approaches.

KEYWORDS *- Feature selection; Dragonfly optimization; Multi-objective Optimization; Swarm Intelligence.*

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Hiding Sensitive Fuzzy Association Rules in Distributed Environment

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ABSTRACT - Increase in sophistication of data analysis and processing techniques aid organizations and governments to store and publish large amounts of data. Business competitors can reciprocate data with mutual interests for extracting useful information or patterns hidden in the data. But this sharing of data may result in confidentiality infringement. If the competitor can extract sensitive information behind the success of a business, then it is possible for an organization to lose its business to its competitors. So each firm before releasing its own data should ensure to hide its sensitive information. Modern organizations have their branches geographically distributed. Each branch stores its daily data locally. Integration of data sets from local sites into a centralized site for mining purpose is not always practical as it may invite enormous network communication costs. Distributed data mining helps in overcoming this problem by mining the data in local sites and aggregating the knowledge in centralized site. This paper proposes a method to effectively hide sensitive association rules in a quantitative database distributed across many sites. Global rules are mined by communicating the local large item set found in each site to the central site. The global sensitive rules are then hidden by perturbing only in local sites, where the sensitive item is locally frequent using Hadoop environment. Experimental results show that the time complexity and the side effects are reduced using the Hadoop environment.

KEYWORDS *- Rule Hiding, Sensitive Rule, Quantitative Association Rule, Fuzzy Association Rule, Distributed.*

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Designing And Migration Of Library Database

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ABSTRACT - Library Management System provides the best means for library automation in India. Many libraries in India would prefer to migrate from proprietary software to Open Source Systems. Open Source Systems are preferred due to their openness, flexibility, speed and motivation. Migration of data from such proprietary software is challenging. The bibliographic data in tabular form is exported to spreadsheet formats like CSV, XLSX in most of the existing libraries. Bibliographic details in spreadsheet format needs to be converted to MARC 21 format which is a standard format for bibliographic data. MARC Edit software is used to assign MARC tags on bibliographic details in spreadsheet. The .xlsx file has to be converted to .txt(tab delimited) which then has to be converted to .mrk format. This .mrk format is then converted to .mrc. Data mapping processes are required before this migration. The .mrc file is then to be imported to any open source database like MySQL. For that, the data to be migrated must have proper validations. Therefore, it becomes important that the conversion of data in XLSX format to MARC 21 format is done with proper data mapping. After importing into database, data can be retrieved as per user's requirement for Cataloging and visualization for better understanding. Openness and collaboration are the essence of Open-Source Software projects. A good number of prominent libraries in India have migrated to such Open Source Systems.

KEYWORDS *- Library, automation, Marc21, Database Migration, open Source Software*

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PAPER ID : PI-00055

Comparative Analysis of Machine Learning (ML) Algorithms for Early Prediction of Parkinson's Disorder (PD) Based on Voice Features

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ABSTRACT - Parkinson Disorder (PD) is a neurological disorder which is progressive in nature and has no cure. Early diagnosis of PD plays a key role in delaying the progression of the disorder. Dysphonia is the most prominent early symptom which is exhibited by approximately 90% of PD patients. Voice features based early diagnosis with the integration of Artificial Intelligence (AI) plays a prominent role in providing accurate, non-invasive and robust predictions to PD patients. This paper focuses on providing comparative and experimental analysis of Machine Learning (ML) algorithms for prediction of PD based on the voice features dataset retrieved from the UCI repository. This paper presents the results from the four sampling experiments conducted with different traditional ML algorithms for the retrieved voice dataset. The results from this study makes it evident that Naïve Bayes provides a highest accuracy of 89% when compared to other Machine Learning (ML) algorithms. This study helps in identifying the best Machine Learning (ML) among the traditional Machine Learning (ML) algorithms for PD prediction based on voice features dataset.

KEYWORDS *- Machine Learning, Parkinson Disorder*

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Implications of Tokenizers in Bert Model for Low-Resource Indian Language

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ABSTRACT - As part of the text preparation process, tokenization, initial tokens for deep language models are prepared. Important de facto models like BERT and GPT defacto utilize WordPiece and BPE as approaches. For low-resource languages, such as the south Indian Dravidian languages, where numerous words may be created by adding prefixes and suffixes, tokenization may have a different effect on those models. We contrast four tokenizers at various granularity levels, i.e., their outputs range from the tiniest individual letters to words in their most basic form. Using the bert pretraining process on the Tamil text, we train these tokenizers as well as the language models. The model is then fine-tuned with numerous parameters adjusted in for improved performance for a subsequent job in Tamil text categorization. The custom-built tokenizer for Tamil text is created and trained with Byte Pair Encoding (BPE), Word Piece Vocabulary(WP), Unigram(UNG), and Word Level(WL) mechanisms and the compared results are shown after the downstream task of Tamil text categorization is performed using the BERT algorithm.

KEYWORDS *- Tokenization, Wordpiece, BPE, Unigram, WordLevel, low resource language, bert*

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Controlling Mouse Cursor Actions Using Face And Eyeball Movement

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ABSTRACT - This paper introduces a method for controlling mouse motions by implementing hand-free contact between the person and a computer with the advancement of technology, there are many different applications for image processing. Image processing and eye tracking have made significant advances. In both procedures, there exist software programs. One type of image processing is eye tracking. Eye tracking is a broad word for software that tracks eye movements, image processing, or image processing user input and recorded data. This provides a substitute method for traditional mouse computers. By using computer vision and different expressions of the face and eyeball movement we are able to control the mouse cursor actions. This method will be helpful for disabled persons to control the mouse. It helps them to do left-click, right-click, scroll up, scroll down and move the cursor to the intended direction. This paper requires libraries such as OpenCV to capture the live images, media pipe to for face recognition, and pyautogui for mouse cursor movements.

KEYWORDS - *OpenCV, pyautogui, Media pipe, image processing*

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Storing and computation of real- time data on the cloud through medical sensors

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ABSTRACT – Healthcare is one among the sustainable developing area in all the countries. IoT – Internet of Things is an emerging technology that provides improvements and better solutions in medical field. An important application cloud computing technology is used for supporting doctors to provide more efficient diagnostic processes. Also, one of the major applications is to get the real time data from medical sensors. Here, we make use of MySignals e-health platform[10] to read patient's diagnostic data and store them on cloud platform and perform analysis on the data. Our project helps display that data in both web-app and android app using which the doctor can monitor the patient's health condition from any location and give suggestions for further treatment.

KEYWORDS *– mysignals, healthcare, e-health, cloud computing.*

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Designing of Text Translation Deep Neural Network Model for Tamil Language Scripts

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ABSTRACT - The role of language in communication and the transfer of knowledge is crucial. If we communicate with someone of a different language, we will experience difficulties, which brings about the need for translators. There are many existing apps that translate the text written on the image into another window and then display it. This translation may be helpful for understanding the text, but it takes away the originality of the scene. The user may not be able to connect the picture to the text, as the translation does not contribute to the overall picture. The problem can be solved by preserving the background of the image and translating the text into the target language. This Instant image translation will improve the experience and make it more interesting and expressive. Instant image translation involves taking a picture of text in a source language, converting it into a target language, and replacing it in real time with the translated text.

KEYWORDS *- Tamil to English Translation, Machine Translation, OCR, seq2seq model, Inpainting, Auto Spellcheck Corrector.*

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Image Classification Model Selector

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ABSTRACT – Image classification is a part of computer vision, in which the digital system categorizes the entire image. Deep-learning models are widely used to solve image classification problem. However, creating deep learning models is resource intensive and time consuming, and requires extensive knowledge in the deep learning domain. Google Teachable machines (GTM) is a website that is used to build an image classification model and require only the dataset as the input, however GTM uses only the MobileNet model for transfer learning and does not balance the image dataset which affects the model's accuracy. In this paper, a tool that automates the steps in building and training an image classification model is proposed. Using this tool, anyone without extensive knowledge of deep learning can build an image classification model for their target dataset. The tool automates the image data pre-processing steps, model building, model training, and model testing to output the best model for the given image classification dataset. The pre-processing steps performed by the tool are image data balancing, resizing the image to the input size of the model, normalization, and image centering. After pre- processing, the dataset was split into training and test datasets. MobileNet V3 large, EfficientNet V2 B3, EfficientNet V2 large pretrained models (pretrained on ImageNet and Imagenet21k datasets) were trained on the training dataset using transfer learning. These trained models were then compared to obtain the best model for the target dataset. The tool was tested on two datasets: a custom construction dataset and Minet dataset. The results were tested on both unbalanced and balanced construction dataset. For the unbalanced construction dataset, the MobileNet model had the highest accuracy of 81.8%, and the EfficientNet V2-B3 model had the lowest accuracy of 58.25%. The proposed tool is then used to balance the construction dataset and train the models on the balanced construction dataset. The MobileNet model has an accuracy of 95.83% on the balanced construction dataset. For the Minet dataset MobileNet models had the highest accuracy of 81.5% (unbalanced Minet dataset) and 84.37% (balanced Minet dataset). Both the dataset is also used to train models using the Google Teachable Machines website. The models trained by the proposed have better accuracy compared to models obtained using Google Teachable Machines. Thus, using this automated image classification model, the selector solution will facilitate the creation of an effective image classification model for the target dataset. This reduces the workload of balancing the dataset and selecting a model from among multiple models used for image classification.

KEYWORDS *- Image classification, automated image classification model selection*

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Sentiment Analysis From Customer Reviews Across Domains

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ABSTRACT - Rapid expansion in all fields, such as manufacturing, entertainment, and IT industries, is occurring in today's globe; as a result, all fields must improve the characteristics of their products to compete in the cutthroat competition. As a result, industries must rely on vast amounts of web data about their products from social media sites and online comments to determine where improvements should be made or where any other flaws should be addressed. Sentiment analysis is the process of extracting and categorizing data to determine whether a text or sentence is positive or negative. In today's world, there are lumps of product reviews and feedback being collected from the customers. The companies must analyze the information regarding their products and assess their product quality and customer satisfaction. This helps the companies make the right decisions, thus improving customer service and product satisfaction. In this project, we will be performing a sentiment analysis on product reviews, across all domains, in turn helping brands from a wide range address their customers' problems in specific, using powerful ML models.

KEYWORDS *- Context, Domain, Embeddings, Lexicon, Sentiment Analysis.*

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Novel Nutritional Recipe Recommendation

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ABSTRACT - Food is the most essential thing for living and it is the foremost important source of energy, which makes us do all the work. Now a days the variability in these food items is increasing. To find out about any new dish or recipe, we mainly depend upon people around us or by trial-and-error method but neither method tells us about its nutritional content present. Since the web has begun to grow and advent of Food recommender systems had made the food suggestion easier, but these systems work only on the feedback provided by the customer. Hence, here comes a requirement for nutritional based recommender system that takes both ratings and nutrition into consideration and provides the user absolute best recommendation in order that the users taste preferences and well-being are given an equal priority. We aim to use Graph Embedding approaches to develop a food recipe recommender system that uses nutritional value of the ingredients alongside the taste of the recipe and feedback of the customer. These food recommender systems can have an impression on people's dietary practices, as its suggestions are both healthy and relevant. People can now eat healthy without being compromised to taste.

KEYWORDS *- Graph Embeddings, Bipartite Graphs, Healthy life style, Nutrition, Personalization, Graph based Recommendation*

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Detecting GAN Generated Fake Images Using Deep Learning Models

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ABSTRACT - The Generative Models for its remarkable data creation capabilities has attracted a lot of attention in the field of unsupervised learning via a practical framework called Generative Adversarial Networks (GAN). The fake pictures formed by neural networks look to be as authentic as a real picture or video, yet after moderation, they nevertheless leave spatial and temporal traces that are discovered using a neural network trained to specialize in Deep fake detection. Proposing methods for automatically identifying and analyzing the integrity of digital visual media is critical. This paper provides a comprehensive review and detailed analysis of existing tools and artificial intelligence-based approaches for deepfake generation, as well as methods for detecting image manipulations. These findings imply that the proposed system can aid in the detection of simulated people who have begun to appear on the internet and are being used as masks by real people with criminal intent.

KEYWORDS *- Generative Adversarial Networks, Deep Fake Detection, Discriminator*

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