CHANDIGARH ENGINEERING COLLEGE
Building Careers. Transforming Lives.

ICCMST 2021

2nd International Conference on Computational Methods in Science & Technology, ICCMST 2021, MOHALI

17– 18 December 2021

Book of Abstract

Editors:
Dr. Sushil Kumar
Dr. Sukhpreet Kaur

CHANDIGARH ENGINEERING COLLEGE
Building Careers. Transforming Lives.

CONFERENCE PROCEEDINGS

2nd International Conference on Computational Methods in Science & Technology ICCMST 2021 Mohali

17– 18 December 2021

Editors:

Dr. Sushil Kumar, Dr. Sukhpreet Kaur

Associate Editors:

Dr. Manish Kumar, Dr. Amanpreet Kaur

Organized by:

Department of Computer Science & Engineering & Department of Information Technology Chandigarh Engineering College

Landran, Kharar-Banur Highway,
Sector 112, Greater Mohali, Punjab 140307, India,
Phone No: +91-0172- 3984200
Website: www.cecmohali.org

Copyright © Chandigarh Group of Colleges, Landran, Mohali, Punjab

Title: International Conference on Computational Methods in Science & Technology ICCMST 2021 - CONFERENCE PROCEEDINGS

Editors: Dr. Sushil Kumar, Dr. Sukhpreet Kaur

Associate Editors: Dr. Manish Kumar, Dr. Amanpreet Kaur

All rights reserved. No part of this publication may be reproduced or transmitted, in any form or by any means, without permission. Any person who does any unauthorised act in relation to this publication may be liable to criminal prosecution and civil claims for damages.

ISBN: 978-81-19079-20-9

Published by :

Bharti Publications

4819/24, 2nd Floor, Mathur Lane

Ansari Road, Darya Ganj, New Delhi-110002

Phone: 011-461782797, 011-23247537

E-mail : bhartipublications@gmail.com

Website : www.bhartipublications.com

E-book Reader

Disclaimer: The views expressed in the book are of the contributing authors and not necessarily of the publisher and editors. Contributing Author(s) themselves are responsible for any kind of plagiarism found in the book and any related issues found with the book.

WELCOME TO ICCMST 2021

The 2nd International Conference on Computational Methods in Science & Technology (ICCMST 2021) is an international forum for researchers, engineers, academicians as well as industrial professionals from all over the world to share and publicize their research work and development activities in various research areas. This conference provides opportunities for our college students & faculty members to interact with the external researchers and delegates to exchange new ideas and application experiences. It also helps to find global partners for establishing educational and research relations and for future collaboration. The conference holistically aims to promote translation of basic research into applied investigation and convert applied investigation into the practice. This conference will also create awareness about the importance of basic scientific research in related fields and synchronizing with product market.

CREDITS AND ACKNOWLEDGEMENTS

The Conference Chairs would like to express their gratitude towards a considerable number of volunteers and helpers who have devoted their time and endless patience to the organization of this conference. CGC is a powerful and ever-growing learning association of many enthusiastic people who have organized this conference for the first time and we are very grateful to be a small part of it. In particular, we have to thank the chairs, who were working on a voluntary basis for a whole year to make this conference a success.

We would also like to thank all the members of the International Program Committee, who provided timely and insightful suggestions and reviews without complaint and little credit. Finally, we would like to thank the Advisory Board Members and Organizing Committee Members of the conference for their support in this amazing endeavor. These are the people who have worked incredibly hard behind the scenes to guide all the aspects of the conference. Special thanks go to Hon'ble Chairman sir, S. Satnam Singh Sandhu, and Hon'ble President sir, S. Rashpal Singh Dhaliwal for believing in us and giving nod to organize such an event. We would also like to take this as an opportunity to thank all those who have actively took part as local organizers of the conference. Last but not least, we would like to thank the Administration of CGC Group, Technical Partners, Publication Partners and our Sponsors for their timely support. We especially welcome conference delegates who are attending ICCMST – 2021 and hope it will be a great learning experience. We kindly ask all ICCMST 2021 committee members to extend the heartiest and warm welcome to all the participants and research scholars, who are now becoming a valuable part of the constantly expanding CGC community.

Warm greetings and welcome to ICCMST 2021.

Dr. Sushil Kumar

Dr. Sukhpreet Kaur

Conference Conveners

MESSAGE

S Satnam Singh Sandhu
Chairman, Chandigarh Group of Colleges

CHANDIGARH ENGINEERING COLLEGE
Building Careers. Transforming Lives.

"I do not fear computers. I fear lack of them."

— Isaac Asimov

It is my immense pleasure writing this forward for the proceeding book of the 2nd International Conference on Computational Methods in Science & Technology (ICCMST-2021) being organized by CGC, Chandigarh Engineering College during December 17-18, 2021. This event is aimed towards sharing innovations, challenges, the latest trends and future scope in the field of computing. Researchers, Professionals, Educators, and Students on a common platform addressing the needs of the hour.

We are even more delighted to have machines that can enable us physically to do things we have never been able to do before: they can lift us into the sky and deposit us on the other side of an ocean in a matter of hours. These achievements do not worry our pride. But to be able to think that has been a very human prerogative. It has, after all, been that ability to think that, when translated to physical terms, has enabled us to transcend our physical limitations and which has seemed to set us above our fellow creatures in achievement.

I am pleased to note that researchers from various Institutes / Universities and Industries from different parts of the country and abroad are presenting their research papers on current aspects of Machine Learning, Blockchain, Cloud Computing, Soft Computing, Computer Vision, IOT, Communication Network, System Design, Web-based Learning, Green Computing, and many more advanced areas.

I am sure that this conference would serve as a platform to connect various academicians, researchers, and scholars to go beyond borders in search of new frontiers in the research of the millennium and as well to showcase their innovations and findings.

I take this opportunity to wish you all great success for the 2nd International Conference ICCMST2021.

S Satnam Singh Sandhu

MESSAGE

S. Rashpal Singh Dhaliwal
President, Chandigarh Group of Colleges

CHANDIGARH ENGINEERING COLLEGE
Building Careers. Transforming Lives.

"The people who are crazy enough to think they can change the world are the ones who do."
— Rob Siltanen

With a pledge to achieve sustainable success in the extremely competitive world of engineering and technology, CGC, Chandigarh Engineering College is organizing 2nd International Conference on Computational Methods in Science & Technology (ICCMST-2021).

To face various emerging challenges in different fronts of engineering and technology, it has become indispensable to explore diversely integrated and interdisciplinary engineering approaches.

I am sure that this conference would greatly benefit researchers, students, and faculty. Young scientists and researchers will find the contents of the proceedings helpful to set roadmaps for their future endeavors. I welcome the delegates and also express my wholehearted congratulations to all the staff & students of CGC, CEC and wish the conference a grand success.

I wish you success in your deliberations to make the event a successful one.

S. Rashpal Singh Dhaliwal

MESSAGE

Dr. P.N. Hrisheekesha
Campus Director, Chandigarh Group of Colleges

"The best computer is a man, and it's the only one that can be mass-produced by unskilled labor."

— Wernher Von Braun

I am pleased to welcome all the dignitaries from all around the globe on the occasion of the 2nd International Conference on Computational Methods in Science & Technology (ICCMST-2021) being organized by CGC, Chandigarh Engineering College.

I am sure that this conference engrossed with the fresh ideas, enthusiasm, and vision of the hosts, will prove to be a wonderful experience for all the attendees.

Computing has reduced the gap between man and machine and it is going to continue to reduce this in the future too. Will "Artificial Intelligence" control human behavior in the future? Such questions are indeed a matter of concern in today's era.

To discuss more such trends, issues, and algorithms in the field of computing, we have to get together online on December 17-18, 2021 at CGC-Chandigarh Engineering College. I hope the talks will be fruitful and researchers and delegates attending the conference will present useful results.

I appreciate the efforts of the teams involved in organizing the conference and wish them all the best for the successful completion of the event.

Dr. P.N. Hrisheekesha

MESSAGE

Dr. Valentina Balas
General Chair, Aurel Vlaicu University of Arad, Romania

"Man is still the most extraordinary computer of all."

— John F. Kennedy

I am glad to find out that the Department of Computer Science & Engineering, Chandigarh Engineering College, Mohali, one of the Pioneer Institutions of Northern India is organizing 2nd InternationalConference on Computational Methods in Science & Technology" (ICCMST-2021) for two days on 17th& 18thDecember, 2021.

This conference is expected to provide an opportunity for Academicians, Researchers, and Industry Practitioners to share their research ideas and interact closely online with each other.

I wish all the success to the conference and I congratulate the organizers of the institute for taking a leading step in this direction.

Dr. Valentina Balas

MESSAGE

Mr. Stephan Van der Merwe
CTO, GP Sourcing Pvt Ltd, USA

"With all the abundance we have of computers and computing, what is scarce is human attention and time."

— Satya Nadella

Allow me to warmly thank the organizers of this important Conference for giving me the privilege of welcoming and addressing you all. For me, it is an honour and a pleasure.

I hope ICCMST 2021 will be magnificent and successful.

Mr. Stephan Van der Merwe

MESSAGE

Dr. Prihandoko, S.Kom, PhD
Deputy Director
Doctoral Program, Gunadarma
University, Indonesia

I am very pleased to be involved in this prestigious event. The ICCMST 2021 brings together academicians, researchers, and industrialists to exchange and share experiences and research results. It also provides an interdisciplinary opportunity for researchers and practitioners to present and discuss the most recent innovations in Computer Science. I hope you will enjoy this valuable event. Though this event is conducted in a virtual mode of delivery, I believe this would not degrade the achievement of its objectives.

Dr. Prihandoko, S.Kom, PhD

ICCMST 2021 Committee

Chief Patron

S. Satnam Singh Sandhu
(Chairman, CGC)

S. Rashpal Singh Dhaliwal
(President, CGC)

Patron

Dr. P.N. Hrisheekesha
(Campus Director, CGC)

Executive Chair

Dr. Rajdeep Singh
(Director Principal, CEC)

Dr. Ruchi Singla
(Dean (R&D), CGC)

General Chair

Dr. Valentina Balas
(Aurel Vlaicu University
of Arad, Romania)

General Co Chair

Dr. Sushil Kumar
(Professor & Head, IT, CEC)

Dr. Sukhpreet Kaur
(Professor & Head, CSE, CEC)

Organizing Chair

Dr. Manish Kumar (Associate Professor, CSE, CEC)

Dr. Amanpreet Kaur (Associate Professor, IT, CEC)

Publication Chair

Dr. Gagandeep Jindal (Professor, CSE, CEC)

Dr. Milanpreet Kaur (Assistant Professor, CSE, CEC)

Dr. Heena Wadhwa (Assistant Professor, IT, CEC)

ICCMST 2021 Committee

Publicity Chair

Mr. Sachin Majithia (Assistant Professor, IT, CEC)
Mr. Gaurav Goel (Assistant Professor, CSE, CEC)
Ms. Shanky Rani (Assistant Professor, IT, CEC)

Finance Chair

Dr. Sumit (Associate Professor, CSE, CEC)
Mr. Amitabh Sharma (Assistant Professor, IT, CEC)

Web Chair

Ms. Dapinder Kaur (Assistant Professor, CSE, CEC)
Ms. Malvika Kaushik (Assistant Professor, CSE, CEC)
Ms. Astha Gupta (Assistant Professor, CSE, CEC)
Manik Setia (Student, CSE, CEC)
Anamaya Sharma (Student, CSE, CEC)

International Technical Program Committee

(Prof.) Dr. Rajkumar Buyya, The University of Melbourne, Australia

(Prof.) Dr. JemalHussein Abawajy, Deakin University, Australia

Dr. Nguyen HaHuy Cuong, The University of Danang, Vietnam

Dr. Ahmed A. Elngar, Beni-Suef University, Egypt

Dr. Ivan Perl, ITMO University, Saint Petersburg, Russia

Dr. Vishal Sharma, Soonchunhyang University, South Korea

Dr. Osama Mokhtar, Obour Institutes, Cairo, Egypt

Dr. Wei Cai, The Chinese University of Hong Kong, Shenzhen, China

Dr. Victor C.M. Leung, The University of British Columbia, Canada

(Prof.) Dr. Prihandoko, Deputy Director, G. University,Indonesia

National Technical Program Committee

Dr. Ranbir Singh Batth, LPU, Phagwara

Dr. Arvind Dhingra, GNDEC, Ludhiana

Dr. Virender Rihani, PEC, Chandigarh

Dr. Pramod Kumar, Dean (R & D), KEC Ghaziabad

Dr. Amalendu Patnaik, IIT, Roorkee

Dr. Bright Keswani, Suresh GyanVihar University

Dr. Vijay luxmi, Guru Kashi University, Bhatinda

Dr. Bright Keswani, Suresh GyanVihar University

Dr. R.R. Bhargava, IIT, Roorkee

Mr. Amit Sangroya, TCS Innovations Lab, Noida

Dr. Ashish Oberoi, Lovely Professional University

Dr. Lalit Goyal, BVCOE, New Delhi

Dr. Deepak Garg, Bennett University, Noida

Dr. Sandeep K. Garg, IIT, Roorkee

Dr. Rajeev Tiwari, UPES, Dehradun

Dr. Savita Gupta, UIET, PU, Chandigarh

Dr. Naveen Aggarwal, UIET, PU, Chandigarh

Dr. Lakhwinder Kaur, UCoE, PU, Patiala

Dr. Ashutosh Kumar Bhatt, Birla Institute of Applied Science, Uttarakhand

Dr. Anil Kumar Sagar, Senior IEEE Member, Professor Sharda University, Noida, India

Dr. SR Biradar, Senior IEEE member, Professor& Dean, SDM College of Engineering and Technology, Dharwad, Karnataka, India

Dr. Anand Sharma, Associate Professor Mody University of Science & Technology Sikar, India

Contents

Ethiopic Base Characters Image Recognition using LSTM

Maru Tesfaye Addis **Ruchika Malhotra**

Delhi Technological University , New Delhi

Abstract

Ethiopic scripts are widely used in Ethiopia by acting as a writing script in many languages. In the scripts, there is a shape similarity of characters and an abundant number of letters in the alphabet. The visual or shape similarity and a large number of alphabets are a problem for any optical character recognition system. To address this issue, in this study, we developed the Recurrent Neural Network-based character recognition model for 26 base Ethiopic characters. In the proposed model, we used our own collected 28 by 28 size image datasets, which has 8912 samples to train and test the recognition model and the Long Short-Term Memory networks used as the recognition algorithm. In the recognition model, a promising testing accuracy reported as a performance measure.

Paper ID: , Reinforcement Learning on the Credit Risk-Based Pricing

Tri Handhika **Ahmad Sabri Murni**

Centre for Computational Mathematics Studies, Gunadarma University, Depok, Indonesia & Department of Informatics, Gunadarma University, Depok, Indonesia

Abstract

Credit scoring is the main process of credit transactions in assessing the credit risk of credit applicants. Unfortunately, in practice, its implementation only stops to the credit approvals. In this research, we utilize credit scores to generate the customized credit prices. We believe that each person has their own credit risk so that they will get different credit prices depend on their individual credit risk. This credit risk-based pricing is optimized by reinforcement learning approaches to represent the dynamic solution related to the updated credit historical data. There are several variables considered in the profit optimization model such as credit scores, tenor, credit prices (or rate for credit applicants), and plafond. We implement this solution to the random generated credit data. Index Terms—reinforcement learning, customized credit price, risk-based pricing, simulation, optimization

Privacy Preservation Techniques for Social Networks Users

Monika Singh

Dept. of Computer Sc. & Engg, Chandigarh University Mohali, Punjab

Abstract

On the internet, Online Social Networks (OSNs) have become a popular service. It's completely changing the way people engage with one another. The latent information in social networks data presents interesting data mining and information extraction challenges. As a result, it is necessary to publish data from social media platforms, but this has resulted in the possibility of sensitive and confidential information about individuals being leaked. This necessitates the protection of privacy prior to the dissemination of data from such networks. In recent years, protecting the privacy of data from Online Social Networks has become a top priority. Several academic research have presented ways for protecting micro-data and social network data privacy. The strategies that secure data privacy are the focus of the literature review paper. Its objective is to help people realize the implications of maintaining their privacy. Then, as a protype model an experiment has been conducted by using ARX tool to preserve the privacy of users by considering the data of real-time social network CORA. It has been analyzed that K-anonymity is able to preserve the privacy of users in CORA dataset. The risk of compromising the privacy has been reduced by a factor of 1.6.

A Chaotic and Hyperchaotic Map based Image Encryption Protocol for High-End Colour Density Images using Enhanced S-Box Pixel Permutator

Priya Kaushik **Ankit Attkan**

Department of Mathematics, Maharshi Dayanand University, Rohtak, Haryana
Department of Computer Science, and Engineering, NIT, Kurukshetra, Haryana

Abstract

The chaotic and hyperchaotic maps from Chaos theory which are both based on cryptographic standards are used in this article to present a novel technique based on repetitive permutations of pixel randomization. A unique picture encryption algorithm is being constructed that takes such meta-data into account and acts at the per pixel rotation level to boost the confusion matrix values, making decrypting the encrypted image extremely difficult for the attacker. With chaotic mapping schemes, an effective encryption key is created, which is a multifunctional encryption key used to jumble the pixel sequences to the point of picture encryption. The suggested protocol conducts both the encryption and decryption phases by increasing the finite fields padding of the corrupted pixels. Multiple levelled s-boxes that orient the pixels in the new encrypted image according to the minimum correlation coefficient are being used to induce pixel permutation and confusion. The experiment employed one of the most well-known photos, such as Lena, to test the quality of the encryption technique and the handling of the key generated thereafter. The outcome of the built protocol for image encryption shows promise in terms of security when compared to existing picture encryption approaches. Correlation coefficient and other parametric experiments indicate the validity of our approach. Because a larger image has more pixels, it has a greater impact on image encryption.

A Comparative Study on Hyperparameter Optimization Methods in Software Vulnerability Prediction

Deepali Bassi **Hardeep Singh**

Department of Computer Science, Guru Nanak Dev University, Amritsar, 143005

Abstract

Hyperparameter optimization (HPO) is the procedure to find the optimal hyperparameters for predictive modelling. In order to build an efficient software vulnerability prediction (SVP) model, effective HPO method is required. Recent studies have explored the area of machine learning for SVP models' construction. Different machine learning algorithms have distinct hyperparameters to be tuned. In this paper, we have compared four HPO methods for six machine learning based SVP models using an open-source public dataset 'Drupal'. The performance of the models is evaluated by the accuracy of the model and the computational time. Experiments are performed using various python libraries such as sklearn, skopt, hyperopt, and tpot. After comparative analysis, we found that bayesian optimization and random search has shown the performance improvement for SVP models with effective computational time.

Relative Analysis of Classification Techniques for Stroke Prediction System

Swapnil Bhalerao, **Ankit Chahar**, **Amal Mathew**, **Eshita Sohani**, **Anish Reddy Banda**, **Kaushik Daiv**

JSPM Rajarshi Shahu College of Engineering Pune, RV College of Engineering Bengaluru, Karnataka, Ms Ramaiah University of Applied Sciences, Institute of Engineering and Technology, DAVV Indore, Madhya Pradesh
Mahatma Gandhi Institute of Technology, Hyderabad,
MIT College of Engineering, Pune, Maharashtra

Abstract

A stroke is a life-threatening medical condition which can cause serious issues to people and their loved ones. Stroke symptoms include difficulty walking, speaking, and comprehending, as well as facial paralysis or numbness. Early therapy with TPA (clot buster) can help to prevent brain injury. Other therapies aim to reduce consequences and prevent further strokes. Then the blood in the body which flows through all the parts also flows through the portion of the brain and when this flow is stopped the brain tissues are deprived of the required amount of oxygen and nutrients which are required for the functioning of the brain properly, results in a stroke and within some time the brain cells begin to die. Stroke is considered to be the world's second-largest cause of death according to the statistics, and it is continuing to be one of the biggest health burden for both people and national healthcare system. It is considered as a big medical emergency which includes risk factors such as atrial fibrillation, diabetes, glucose metabolism dysregulation. The method proposed by the authors give an idea to the researchers about which is the best method to use from adaboost, SVM, random forest classifier, Xgboost and logistic regression.

A Supervised Machine Learning Approach for Analysis and Prediction Of Water Quality

Abhinav Mittra **Devanshu Singh**

Anish Banda

Manipal Academy of Higher Education, Manipal, Karnataka
Sapthagiri College of Engineering Bangalore
Mahatma Gandhi Institute of Technology Hyderabad

Abstract

A cloud service provider's primary goal is to efficiently use resources by reducing execution time, cost, and other factors while increasing profit. As a result, effective scheduling algorithms remain a key issue in cloud computing, and this topic is categorized as an NP-complete problem. Researchers previously proposed several optimization techniques to address the NP-complete problem, but more work is needed in this area. This paper provides an overview of strategy for successful task scheduling based on a hybrid heuristic approach for both regular and larger workloads. The proposed optimum scheduling method employs two distinct techniques to select the suitable VM for the specified job. To begin, it enhances the LJFP method by employing OSIG, an upgraded version of the Genetic Algorithm, to choose solutions with improved fitness factors, crossover, and mutation operatorsThe proposed algorithm's performance is assessed using two distinct cloud scenarios with various VMs and tasks, and overall execution time and energy usage are calculated. The proposed algorithm outperforms existing techniques in terms of energy and average execution time usage in both scenarios.

Hybrid Scheduling Strategy in Cloud Computing based on Optimization Algorithms

Komal **Gaurav Goel**

Dr. Milanpreet Kaur

Department of CSE , Chandigarh Engineering College, Landran, Mohali, Punjab

Abstract

A cloud service provider's primary goal is to efficiently use resources by reducing execution time, cost, and other factors while increasing profit. As a result, effective scheduling algorithms remain a key issue in cloud computing, and this topic is categorized as an NP-complete problem. Researchers previously proposed several optimization techniques to address the NP-complete problem, but more work is needed in this area. This paper provides an overview of strategy for successful task scheduling based on a hybrid heuristic approach for both regular and larger workloads. The proposed optimum scheduling method employs two distinct techniques to select the suitable VM for the specified job. To begin, it enhances the LJFP method by employing OSIG, an upgraded version of the Genetic Algorithm, to choose solutions with improved fitness factors, crossover, and mutation operatorsThe proposed algorithm's performance is assessed using two distinct cloud scenarios with various VMs and tasks, and overall execution time and energy usage are calculated. The proposed algorithm outperforms existing techniques in terms of energy and average execution time usage in both scenarios.

Smart System for Real-Time Remote Patient Monitoring Based on Internet of Things

Nasser M. Al-Zidi **Mohammed Tawfik**
Aymen M. Al-Hejri **Ibraheam Fathail**
Talal A. Aldhaheri **Qasem Al-Tashi**

Dr. G. Y. Pathrikar College of CS & IT MGM University Aurangabad, India
Department of Computer Science & IT Dr. Babasaheb Ambedkar Marathwada University Aurangabad, India
Faculty of Administrative and Computer Sciences Albaydha University Albaydha, Yemen.

Abstract

Patient monitoring has become one of the most popular studies and is of interest to many researchers worldwide due to the development and growth of healthcare technologies. People in rural areas face multiple diseases and issues due to distance, lack of doctors, and lack of medical treatment for patients. One of the best solutions to these issues is remote patient monitoring. This paper proposes a real-time remote patient monitoring system based on the Internet of Things that can monitor the basic vital signs of the patient, such as body temperature, heartbeat rate, and blood pressure. The core of the system is a wearable device consisting of a microcontroller, a Wi-Fi module, and sensors. Sensors are used to capture patient's vital signs, and the data captured by the sensors is transmitted to the cloud database via a Wi-Fi module. The doctor can real-time monitor the patient via an Android-based smartphone application or retrieve previously recorded data via a website. Moreover, the system will send a notification to the doctor application if any of the vital signs exceed the predefined threshold value. Thus, the real-time remote patient monitoring system helps in the early detection of critical condition and contributes to saving people's lives.

Comparative Analysis of Deep Learning, Supervised Learning, and Time Series Techniques for Forecasting New York Stock Exchange

Muhammad Shahbaz Shah **Zahoor Ahmad**

Department of mathematics, COMSATS University Islamabad, Abbottabad Campus Abbottabad, Pakistan

Abstract

In this paper, interrogation of precision of the supervised learning and time-series analysis for forecasting stock prices get studied. For investors, it is strenuous to choose divergent assets for their investment. Uncertainty of financial markets is unable to be perceived by elementary models to forecast capitals with more reliability. Eventually, machine learning and artificial intelligence based on human intellect are dominating trends in every field of development. Many advancements are due by applying machine learning models for future meticulous predictions of assets holding values. So, this article gets proposed by employing supervised learning (linear regression, LASSO regression, Elastic Net, SVR, K-Nearest Neighbors, Decision Tree regressors, Ensembles models) and time-series (ARIMA and Recurrent Neural Network Peculiarly Long Short-Term Memory LSTM) approaches to forecast stock's values. The algorithms of the proposed models aim to anticipate future values of stocks and to analyze the performance. Out of all proposed techniques, linear regression, MLP, ARIMA, and LSTM perform very well with low error and high accuracy. Moreover, prescribed approaches also outperformed some techniques in the literature review.

Study on Design and Viability for Enhancement of Smart Cities Urban Rain Flood Ecosphere

Rubal Jeet **Dr. Sukhpreet Kaur**
Dr. Milanpreet kaur
Chandigarh Engineering College, Landran, Mohali

Abstract

Urban flood problems have developed as a result of climate change in the contemporary urbanization environment. This study helps to develop design as well as workable inner cities flood ecology to encourage the development of a clean city. It offers many benefits: enhancing the water environment, limiting urban water logging, decreasing pollution from runoff, increasing water quality for rivers and lakes, reprocessing rainwater assets, filling groundwater as well as much more. This article integrates the design techniques as well as benefits design of outcomes, which have been developed over decades using conventional regulation and used for the current research. It rebuilds and combines the needs of conventional regulation and spontaneous urban building, creating viable urban rain flow ecology in industrial as well as intelligent urban environment. Ultimately, the control of new rage lands in the Chinese town of Yanjin is contemplated for experiments as well as design for the direction is implemented by this arrangement. Findings of the model acquired from the clean construction test have functionality and may enhance the urban environment and the life of the town. The design outcomes of the management plan, incorporating the clean city concept, can offer efficient technological support as well as ensure the inner cities environment. Study described in article can evaluate as well as plan flood reduction actions to detect such situations principal to the risk reducing of flooding in intelligent towns as well as cities.

Fingerprint Image Crime Detection Using Deep Learning

Konakanchi Anusha **Siva Kumar P.V.**
VNR Vignana Jyothi Institute of Engineering Technology

Abstract

Fingerprint images in crime prospect are significant evidence to resolve sequential cases. Some elastic distortion occurs in fingerprint creating some mismatch issues. To rectify these issues a complete crime scene fingerprint identification system is presented here with the aid of convolutional neural network (CNN) a deep machine learning algorithm. Images obtained from crime prospects are exploited as the database. These images are generally imperfect and therefore complicated to categorize. Therefore, appropriate enhancement processes are made for pre-processing the fingerprint images that is the minutiae features are extracted from the fingerprint images. These features are given to the CNN network as input for training as well as testing. The performance evaluation is done by calculating precision, recall, f1-score and accuracy. The experimental results are made by implementing in python where the proposed achieves a high accuracy rate of 99% recognition rate.

Predictive Model for Student Academic Performance using Classification and Feature Selection Techniques

Sachin Majithia, **Neeraj Sharma**
Chandigarh Engineering College, Landran, Punjab

Abstract

Data Mining is one of the most important concepts used today to find out important information from a huge database with the help of different techniques, which are helpful for making any final decision for any organisation or institution. The application areas of data mining are growing day by day in the field like education, marketing, production, hospital, hospitality, IT sector and auto-mobile industries etc. In education sector the use of data mining has its own importance. At present, a lot of data related to students' academic are stored in digital form in the institution and if that data is processed properly to find some pattern related to student learning, then it helps to achieve good result in future. So, data mining techniques help to find the hidden information or pattern from student data. We have different data mining techniques to find the pattern and important information are classification, clustering, regression and association rule mining algorithms. Here, in this paper, we implement different data mining techniques like naive Bayes, Random Forest, Decision Tree (J48), Multilayer Perceptron, Decision Table, JRip and Logistic Regression to predict the academic performance of the student. In any real word, dataset contains a lot of features or attributes and all these attributes are not important or play any important roles in the mining process. So, the attributes in the dataset where the variance in the different values in the attributes are close to zero are deleted from the dataset, because it does not have any contribution in the mining process. We have different Feature Selection (FS) methods in data mining like Correlation Attribute Evaluator (CAE), Information Gain Attribute Evaluator (IGAE) and Gain Ratio Attribute Evaluator (GRAE). These features are used to remove those features which does not contribute in any mining process to predict the result. So, in this paper we compare the prediction result of base classification algorithms with the classification algorithms used with some feature selection algorithm.

Enhanced Data Management Framework for Cloud Based System

Dapinder Kaur **Pritpal Singh**
Vinit Kumar **Ayush Gupta**
Chandigarh Engineering College, Landran, Punjab

Abstract

In recent years, the notion of cloud computing has grown in popularity. In cloud computing, data storage is a critical and significant study area. A novel approach for safe data storage has been presented to address the challenges of data security on cloud servers. The proposed technique categorizes the data according to the type of data file and then it is partitioned and encrypted before being stored on servers. This approach has been subjected to save time and improve the throughput. With this integrated solution, Data storage on the server requires lesser time. In addition, it has a higher throughput than the integrated technique

A Brief Systematics Visualization of blockchain technology in healthcare and insurance: A bibliometrics Analysis

Vivek Pandey **Dr. Krishnendu Rarhi**
Department of Computer Science & Engineering Chandigarh University Punjab

Abstract

Blockchain is a decentralized technology that enables people to transact and manage their data. Its wide application is healthcare, insurance, and supply chain management etc. "the aim of this study is to analyze the work carried out in healthcare and insurance using blockchain technology for security and privacy of patient's health records". The evolution and author productivity of blockchain in healthcare and insurance from 2016 to 2021 (August 2021) have been considered for survey. Where 1323 articles based on healthcare and 351 documents based on insurance were retrieved documents from Scopus. Using IEEE of database 666 documents has been found for the healthcare domain and 173 documents has been extracted for the Insurance domain, PubMed database 306 documents has been extracted for the healthcare domain. There are also over 30 documents for the insurance domain. The search included the year 2021 as we are still in the third quarter of the year. The US, China and India are the major contributors. VOS viewer was used as a bibliometric analysis tool to study the various aspects of blockchain technology in health care & insurance. "The main point of databases is analyzed in the terms of number of documents per year, sources of publications, documents per country, authors correlation etc. parameters are statistically analyzed. Using statistical and network analysis we can conclude the there is huge scope and future to work in the blockchain domain to achieve more integrity, security and privacy".

Internet of Things-Based Middleware Against Cyber-Attacks on Smart Homes using Software-Defined Networking and Deep Learning

Mohammed Tawfik **Nasser M. Al-Zidi**
Belal Alsellami **Aymen M. Al-Hejri**
Sunil Nimbhore
Department of Computer Science & IT Dr. Babasaheb Ambedkar Marathwada University Aurangabad, India & Faculty of Administrative and Computer Sciences Albaydha University Albaydha, Yemen

Abstract

Internet of Things (IoT) devices are expected to number about 3.5 billion by 2023.; a tremendous amount of Internet of Things (IoT) data that is generating (IoT) devices is estimated to exceed 79.4 zettabytes by 2025. Security challenges will become an increasingly significant issue, especially in smart homes that depend entirely on IoT devices. Due to the weak infrastructure of the IoT, it is vulnerable to various types of cyber-attacks. The most common IoT attacks are distributed denial of service (DDoS). Most traditional security solutions, like intrusion detection systems (IDS), cannot detect most attacks. Complexity is being hidden by a new paradigm that recently arose, called the software-defined system that is brings a significant change to the networking industry, a great solution for mitigation of attacks that can adopt deep learning technique to encounter cyber-attacks based on the attack behavior and by filtering normal and attack traffic by using well-defined rules. This paper proposed a system by suggesting middleware that can help mitigate or prevent various attacks on IoT on smart home environment. Machine learning has included in the middleware to provide automatic protection against cyber-attacks on IoT networks. A promising approach to protecting real-time, highly accurate attacks on SDN-managed IoT networks has been proposed. This middleware allows IoT devices to efficiently handle evolving security threats dynamically and adaptively without impacting the IoT devices.

Data security in IOT using Trust Management technique

Mr. Dipra Mitra **Dr.Shikha Gupta**

Department of Computer Science & Engineering Chandigarh University Punjab

Abstract

A dream of things to come Internet is presented in such a style, that different registering gadgets are associated together to shape a system called the Internet of Things (IoT). This system will produce huge information that might be utilized for diversion, security, and above all client trust. However, trust is a basic obstacle that may upset the IoT development and even defer the generous press of various applications. In this review, a broad examination of trust in the board strategies alongside their upsides and downsides is exhibited in an alternate setting. In correlation with different studies, the objective is to give an orderly portrayal of the most significant trust the board strategies to enable analysts to know that how different frameworks fit together to bring favoured functionalities without looking at changed principles. In addition, the exercises learned are exhibited and the perspectives have contended with respect to the essential objective trust is probably going to play later on the Internet.

Comparative Analysis of Heterogeneous Ensemble Learning using Feature Selection Techniques for Predicting Academic Performance of Students

Nidhi **Mukesh Kumar**

Shweta Agarwal

CSE Chandigarh University Punjab

Abstract

Data stored in digital form is increasing daily, and so its complexity. Processing a massive volume of data needs efficient technology. Data mining and Machine Learning researchers are focused on finding a suitable algorithm that can find important information after processing that data. In educational data mining, most of the students' records are also stored in digital form. So, the researchers are also trying to find some informative knowledge that can be helpful for the students, teachers, and management to improve their working towards the success of the students and institution also. In predictive modelling, the main challenge is finding the most effective predictive techniques that help achieve an acceptable accuracy level. This article, therefore, proposes a hybrid or heterogeneous approach of Correlation Attribute Evaluation, Ensemble Learning like Stacking, Voting and MultiScheme, in conjunction with seven different Machine Learning algorithms to improve the prediction accuracy up to an acceptable level. Here, k-fold cross-validation was used as a test method to evaluate the predictive performance of the classification algorithms.

Danger Warning System for Blinds using Computer Vision (Sixth Sense) and OCR

Chetan Arora **Deval Verma**
Gaurav Verma **Jyoti Kandpal**

Dept. of Electronics and Comm. Engg. , Jaypee Institute of Information Technology, Noida
Dept. of UIS- Mathematics, Chandigarh University, Mohali
Dept. of Electronics and Comm. Engg. , G. B. Pantnagar University of Agriculture and Technology, Pantnagar

Abstract

Danger warning system for blinds is a unique system which admonishes blinds, if there is any danger area having a sign board like “Men At Work”, “Maintenance Going On”, by playing a sound in their ears through a headphone. In this paper, the camera is acting as an input device which takes continues snapshot and then indicates the blind person, if it detects any warning sign board. First, it eliminates the background (preprocessing), then it crop the ROI, segregate the alphabets, recognize the alphabets, makes the word again and if that word would be related to the danger it will indicate the person by making a sound.

Dynamic Trust based IDS to Mitigate Gray Hole Attacks in Mobile Adhoc Networks

Samita Devi **Dr. Manish Kumar**
Sachin Bhardwaj **P. N. Hrisheekesha**
Department of Computer Science & Engg., Chandigarh Engineering College, Mohali

Abstract

Communication between mobile nodes occurs in Ad-hoc networks without a centralized control system. The mobility of a node in this environment is unpredictable; this is a feature of wireless networks. The network is subject to routing misbehavior and attacks as a result of defective or malicious nodes. Active attacks are the most harmful for networks because they raise the risk of information loss. The focus of this research is on the Smart Gray Hole Attack. This assault degrades the MANETs' performance to the point where regaining control becomes the most difficult task. Several researchers previously worked to combat these assaults, but the problem persists, compromising the network with numerous dangers. Most suggested security methods have not been tested on huge amounts of traffic, attacker nodes, or congestion, which increases communication complexity and necessitates the development of preventative techniques. As a result, in this paper, a trust-based security protocol is proposed. The trust parameters, derived from two factors: (i) Current Energy and (ii) Packed Drop Count of a node, are used to choose IDS. The selected IDS node assists the source node in selecting a data transmission path and then monitoring that route until the transmission is complete. The impact of each scenario is computed using PDR, NRO, and PLR, and the performance of this proposed protocol is tested using three distinct scenarios with varied numbers of attackers, mobility, and nodes. In order to assess the effectiveness of this work, a grey hole attack is used. The average PDR is 96.2%, the NRO is 0.681, and the PLR is 3.8% higher than other current protocols such as AGHA and AODV. In this work, a comparison is conducted for each scenario, and it is noticed that increasing the number of attackers and mobility decreases performance, but increasing the number of nodes increases the possibility of more alternative pathways. All of the calculations demonstrate that the proposed protocol outperforms other current protocols, achieving the intended result.

Comparative Analysis of Classifier Methods for Effort Estimation

Swati Rehal **Priya Dogra**
Neeraj Sharma **Amrit Pal Singh**
Chandigarh Engineering College & National Institute of Technology, Srinagar

Abstract

To develop a quality software we need to predict effort require to develop a software is known assoftware development effort estimation. Development of software it is required to do a correct estimation, because while implementing software it creates problem if it is notestimated correctly. The aim of this paper is to introduce acapacity for effort estimation of the software. It is done on therequirement based complexity of the software which is yet tobe matured. In this paper, we use various categories ofclassifier models on some datasets i.e Albercht, China,COCOMONASA, Kitchenham by using some performanceparameters i.e correlation coefficient, mean absolute error,root mean square error and relative absolute error. To predict a cost it is important to predict effort first. Theprocess of effort estimation appears under the planning phaseof management of the software task. In this paper, an analysisof distinct classifier algorithms is used for the task of effort estimation.

An Analysis of the Assessment Criteria for Learning Analytics

Amandeep Kaur **Dr. Karanjeet Singh Kahlon**
Department of Computer Science and Engineering Guru Nanak Dev University, Punjab

Abstract

Learning Analytics (LA) is a research subject that entails the development of methods and strategies for evaluating, quantifying, and interpreting trends in data gathered from various educational environments and activities to aid in the development of learning systems. This article provides an in-depth look into the field of Learning Analytics. It also examines the most widely referenced papers on the topic. The focus of this paper is on a thorough list of measures that have an impact on the Learning Analytics Framework. The parametric evaluation of LA is based on its intimate contact with all stakeholders, including educators, students, researchers, caretakers, and regulatory organizations. It also highlights the future of learning analytics.

Cryptography: Analysis of SYN and UDP Attacks using wire shark

Rubika Walia **Prachi Garg**

MMEC, M. M. (Deemed to be University), Mullana, Ambala, Haryana

Abstract

Safety is the most puzzling concern for network security. Due to rapid growth of internet and networks applications, volume of files exchanged between users is increasing very rapidly. Therefore Data safety has been very crucial problem for information transmission. Any damage or danger to data can be high-quality damage to the business enterprise. Cryptography shows a primary position in statistics safety. In modern existences network safety is known to be a critical tricky. Cryptography can be applied to hassle-free data and achieves admission by scattering of cryptographic keys among devices. This article provides review on applications of Cryptography and discussion on analysis of SYN and UDP attacks once we communicate particular data from source to receiver.

Skin Cancer Multiclass Classification Through Different Types of Convolutional Neural Networks

Mohit Kumar **Syam Machinathu Parambil Gangadharan**

Department of Computer Science and Engineering, University Institute of Engineering, Chandigarh University Mohali, Punjab & General Mills, Minnesota, United States of America

Abstract

In the human body, one of the major diseases found in some people across the globe is cancer. Cancer can be at any portion of the body like the breast, lungs, prostate and many more. One of the major difficulties during the analysis of cancer is the prediction of the type of cancer. This paper also discusses one of cancer, i.e., skin cancer, which are mainly seven types. To perform this multiclass classification, the work has done through the deep learning models based on Convolutional Neural Networks. Convolutional Neural Networks are implemented using pretrained model i.e., VGG-16. Firstly, segmentation is done with encoding and decoding using masking approach. Secondly, the model is evaluated and finally the prediction of different skin images for the cancer detection. Thereafter classification is done through Convolutional neural network and finally the model validation is done K cross fold method.

Implementation of a Novel Artificial Intelligence Cognitive Mechanism for 'Social Humanoids'

Syed Bukhari **S S**

Jamia hamdard

Abstract

Human-robot interactions require many functional capabilities from a robot that have to be reflected in architectural components in the robotic control architecture. For this, various mechanisms for producing social behaviours, goal-oriented cognition, and robust intelligence are required. In the last two decades, many research works have been initiated to conceive an architecture that can cater to human-robot interactions. A major and most recent contribution in this direction is the Distributed Infrastructure with Remote Agent Control (DIRAC) architecture leading to more natural interactions with humans, while also extending the overall capability of the integrated system. There is a high potential in extending the same DIRAC architecture to design humanoids. The pace at which soft robotics is accelerating points out that a breed of humanoids called social humanoids is not far away. So, there is a need to conceive a novel architectural framework for humanoid-Sapien interaction which would lay the platform on which soft robotics thrives. This research paper endeavors to design this artificial cognitive mechanism for social humanoid interactions.

COVID-19, Corona Virus Detection Using Artificial Intelligence

Praveen Kumar Sharma

Chandigarh Engineering College Landran Mohali

Abstract

Radiology is one of the major fields in carrying out diseases. Different input forms come under this field like Xray, CT-SCAN and MRI. As computer vision is one of the prominent fields which is helping radiologist now days. This research detect the different opacities in the CT-scan of infected patients viz. Ground-Glass Opacity, Consolidation Opacity and Crazy Paving Opacity, which in turn will help the clinical doctors all over the world, to do a quick diagnose in the detection of Corona Virus with Deep Learning . This model has overcome the results of Reverse transcription polymerase chain reaction (RT-PCR) which is not very efficient in the early diagnosis of the symptoms in the affected patients because its results are not stable for the first two weeks and it can detect some of the symptoms only after the level of infection is increased gradually up to a certain level. This model achieve an accuracy of 97.4%

Hybrid Approach for Virtual Machine Optimization using BAT Algorithm in cloud

Dr. Amanpreet Kaur **Dr. Sushil Kamboj**
Dr. Bikrampal Kaur
Dept. of Information Technology, CGC, Landran, Mohali, Punjab

Abstract

The virtual machine (VM) in cloud is overutilized if it takes the total time to complete the execution of workflow more than the maximum acceptable limit. In this paper, bat Algorithm is hybridized with heuristic techniques to identify the VMs under overload condition and to optimize their utilization. In proposed model, the bat algorithm parameters (Frequency, velocity, loudness, pulse rate) are seeded by the heuristic approaches (HEFT and PEFT) to reduce the makespan and cost of executing the workflows. The model is implemented in CloudSim and results are compared with state-of-the-art ACO and PSO metaheuristics.

Latent Space Data Augmentation for Facial Diagnosis from Face Images of Multiple Diseases

Hari Babu **Eswara Reddy**
Department of Computer Science and Engineering, JNTUA CEA, Anantapur, 515002

Abstract

Deep learning solved many real-world problems that were impossible to computer a few decades ago like image classification. Facial diagnosis is one such problem in which facial photographs are used to find the type of disease a person is having. To solve these problems efficiently it depends on large data. Unfortunately, domains like medical image analysis do not have access to this large data. In this paper, we use latent space data augmentation to synthesize the data to perform facial diagnosis. Supervised auto-encoder with transfer learning is used to learn important features from facial images. Interpolation transformation is applied to latent space to synthesize the data. A Deep Neural Network and Support Vector Machine is trained on synthetic data and achieved 94.4 and 95.0 percent accuracy, respectively.

Fog Computing Framework For Multi Constraints-Based Resource Utilization

Heena Wadhwa **Rajni Aron**
Chandigarh Group of Colleges, landran and NMIMS University, Mumbai

Abstract

With the incorporation of new paradigms like artificial intelligence, cloud computing, fog computing, and IoT, smart cities can enhance the different standards of living for the residents. Inday-to-dayy routine, every person in this world generates lots of data. Many methodologies are used for managing these data and developing a fully functional model. Different industries have started using these technologies to establish a more dynamic environment for applications. In this review paper, the framework of fog computing is discussed which were used for some applications. The discussed framework concentrates on data integrity by using a secret sharing layer and communication between the fog-cloud layer. Along with this, different constraints are discussed, which emphasize the resource allocation process. The obtained results are verified by statistical analysis.

Performance Investigation of Centroid-Based Localization Algorithm and Comparison of Improvement Achieved in Localization Error Using Optimization Techniques in WSN

Vikas Gupta **Milanpreet Kaur**
Abhishek Gupta
Chandigarh Group of Colleges, landran

Abstract

A Wireless Sensor Networks (WSN) is an assembly of sensor nodes that are dispersed arbitrarily in the region of concern to observe a physical quantity like temperature, vibrations and humidity etc. Localization of sensor nodes plays an important role in WSN which covenants with the findings of coordinates of unidentified nodes for correct routing of data. The centroid localization algorithm (CLA) is extensively explored algorithm but it is troubled with large localization error (LE). In this paper the range free CLA is analyzed in terms of localization error. Then for minimization of localization error optimization algorithms; soft computing techniques viz. PSO, ABC and DE are applied. The performance comparison of the improvement achieved in the localization error for CLA is performed by considering the variations in communication range and computation time. Simulation outcomes demonstrate that ABC based CLA performs well over other methods.

First Principle Contemplation of Carbon Peapod (C20@CNT) Junction

Milanpreet Kaur **Rubal Jeet**
Gaurav Goel **Vikas Gupta**
Ravinder Singh Sawhney
Chandigarh Group of Colleges, Landran & Guru Nanak Dev University, Amritsar, Punjab

Abstract

In this paper, we placed highly curved C20 fullerene within armchair CNT and scrutinized the electronic state of this carbon peapod using Density Functional Theory. The Non-Equilibrium Green's Function is selected to examine the quantum transport once the carbon peapod, C20@CNT is adjusted in between the pair of CNT electrodes with (6, 6) chirality. The computed results are then assessed and associated with pure CNT junction. The calculated electronic parameters of these two probe device junctions are exploited to deduce their electrical parameters. The insertion of C20 fullerene in the empty cavity of CNT lead to the linearity in the current curve of a peapod junction formed, in comparison to the one constructed otherwise. Also, the assessment suggests that the aftermath of encapsulating C20 fullerene molecule can increase the fluctuating behavior of conductance.

Energy-saving Techniques for Cloud Datacenters: An Empirical Research Analysis

Arif Ahmad Shehloo **Muheet Ahmed Butt**

Majid Zaman

Mewar University & University of Kashmir

Abstract

Platforms for cloud computing make it possible for end users to get access to computing resources online. The emergence of cloud computing has led to an increase in the use of Apache Hadoop in cloud data centers MapReduce and the open-source framework Hadoop have generated great interest among both researchers and corporates. Optimizing Hadoop's energy consumption has been identified as a critical issue, with numerous studies undertaken on the topic. FIFO, capacity, and fair scheduling are the most commonly used scheduling algorithms in Hadoop cloud data centers. In this paper, we empirically examine these algorithms for energy efficiency using different benchmark data sets. Experimental findings indicate that the Capacity scheduler saves a considerable amount of energy when compared to other scheduling algorithms using different workloads. Further, this paper examines additional nature and non-nature-oriented energy-efficient scheduling techniques that are frequently used in cloud data centres. The studies that have been explored are classified into the following categories: node management, virtualization and consolidation, task scheduling, data placement, and infrastructure change A brief discussion of the rationale for each category is included, along with its strengths and weaknesses. In addition, the cloud computing research community has been provided with a futuristic perspective in the area, based on current trends in energy-efficient algorithms. The findings and directions presented in this study may be useful to researchers interested in optimising cloud data center energy consumption.

Automated Line Segmentation for Gurmukhi Text Recognition System

Gurvir Kaur **Dr. Ajit Kumar**

Punjab University, Patiala & Multani Mal Modi College Patiala, Punjab

Abstract

In a Text Recognition system, segmentation is a critical and difficult phase. When words in the target language cover more than one zone, such as in Gurmukhi, it becomes more challenging. Moreover, automated systems are becoming more popular in this modern age due to their ability to save time and labour. This research also looks at the automation process for text recognition systems, in which lines are segmented automatically without the need for external assistance, particularly in the Gurmukhi language. Earlier, only a few solutions were developed, but they were not evaluated on huge datasets, which does not reflect the efficiency of the existing systems. So, in order to produce efficient results, an automated line segmentation strategy 'AutoLineSeg' is proposed in this work, which uses the projection profile method along with some pre-processing. To offer reliable data for segmentation, this proposed system additionally does skew correction. The testing of the system is done on the dataset with 1000 images of typewritten Gurmukhi samples. The proposed method's accuracy is calculated, and the findings reveal that the system obtained around 91% accuracy, which is sufficient for a text recognition system.

Prediction of Parkinson Disease in Unsupervised Way using Hybrid Approach through MRI Images

Kamlesh Kumar Dubey **Anjali Goswami**

Department of Applied Sciences and Humanities Invertis Uniersity Bareilly, UP & Department of Mathematics and Statistics College of Science and Theoretical Studies Saudi Electronic University Riyadh

Abstract

With the help of the Parkinson's Telemonitoring dataset, this paper presents a deep neural network model for predicting the progression of Parkinson's disease. As a result of Parkinson's disease (PD), body movement becomes increasingly difficult. This rating scale is used to determine whether or not someone has PD (UPDRS). To deal with the dataset's multicollinearity issues and reduce the input feature space's dimension, principal component analysis (PCA) is then used. K-clustering models are then used to predict sensitivity, specificity, and processing time for patients with Parkinson's disease using the reduced features fed into the k-clustering model.The proposed model has computed the sensitivity of 99.78%, specificity of 98.16% and the processing time of 6.4 s, which is better than other existing algorithms such as ANN, and mRMR merged with CVANN.

Integrating Artificial Intelligence and 5G in the Era of Next-Generation Computing

Dr. Monika Singh

Dept. of Computer Sc. & Engg., Chandigarh University, Mohali, Punjab

Abstract

The introduction of the 4G/LTE (Long Term Evolution) mobile network has addressed the main obstacle of higher capacity, allowing for the construction of true broadband mobile Internet. This was mainly made possible by a flexible network design and robust physical layer. However, services such as augmented reality (AR), virtual reality (VR), and others that require more bandwidth have been developed in new ways. Furthermore, new services like Internet-of-Vehicles and vehicle communications are putting a substantial demand on mobile networks for enhanced reliability and near-zero-latency performance (IoV). 5G has overcome some of these obstacles by employing a new radio interface based on massive multiple input multiple output (MIMO). However, network operators must consider an advanced level of intelligence in their networks to learn the operational environment and users' behaviours and needs in depth. In order to establish a proactive and efficient self-updatable network, it is also essential to foresee their evolution. We explore the importance of artificial intelligence and machine learning in 5G in order to develop a cost-effective and adaptive next-generation mobile network in this study. In addition, a comparison between the 5G and 4G networks has been done to showcase the capabilities of 5G network over 4G. Further, some practical use cases of AI/ML are also discussed. Although the countries such as China and US have already started working with some of the applications as discussed but in India, 5G technology will take some time to spread its wings in all real-time applications as discussed. This paper can help researchers to start integrating AI and Machine learning with 5G technology.

Multimodal Biometric System to Strengthen the Security: A Review

Aditiya Mehta **Dr. Sumit Kaur**

Chandigarh Engineering College Landran

Abstract

The internet is becoming a more important part of everyone's life in this technological age since it serves a variety of everyday requirements such as social networking, banking, communication, information sharing, etc. In many situations, an increase in need raises the possibility of stealing. As a result, it is necessary to protect the system from theft and provide a layer of protection so that anybody may profit from advanced technology without fear. Passwords are used in traditional security systems for authentication, and they are easy to crack. The idea of biometrics in the realm of security was introduced. Unimodal Biometrics Systems were first introduced in the field of security. Various traits such as fingerprints, face, iris, voice, finger veins, signature, and others were widely accepted by various systems. However, as technology advances, the threat level rises, and the scope of unimodal systems shrinks. This is the primary reason for the growing popularity of multimodal biometric systems, in which more than one modality is employed, and a security lock is established. The level of security is increased with these multimodal systems. The features of the multimodal biometric system, its relevance, current systems are covered in this article, along with the analysis based on traits and its performance.

Multilevel Secure Multilevel Share based Visual Cryptography Color Images for Cloud Storage

Mohd. Amaan Siddiquie **Kaptan Singh**

Amit Saxena

RGPV, Bhopal

Abstract

It is a high concern to secure huge amount of imaging data stored over the cloud servers. The Visual Cryptography (VC) is a widely used approach to encrypt these imaging data. The major concern during the designing of VC methods is maintaining the robustness of algorithm. And recovery of image back is also a serious concern. It is highly required to improve the recovery quality of the images. In this paper, a hybrid VC algorithm is proposed. The proposed method takes advantages of image halftoning and the multi share encryption algorithm. Initially color image is converted into gray image then half tone image is generated. The VC of multi-share algorithm with six-shares is implemented over binary converted images. Performance of the different halftone based VC methods is evaluated for color images. The parametric evaluation is done based on the MSE and PSNR.

An Optimized Multiple Malicious Node Detection Method for Detection of Security Attacks in VANETs

Sushil Kamboj **Dr. Kulwinder Singh Mann**
Dr. Sukhpreet Kaur
Chandigarh Group of Colleges, landran & Guru Nanak Dev University, Amritsar, Punjab

Abstract

Vehicular Adhoc Networks (VANETs) are used to do communication between different vehicular nodes. But this communication is affected by various security threats which can hamper the performance of network. The proposed research will help in detection of one such attack that is DoS attack (Denial of Service) attack. This will help VANET in detecting flooding in DoS attack. The detection of malicious nodes and invalid networks is based on evaluation of entropy and threshold values. The proposed algorithm that is MMPDA (Multiple Malicious Node Detection Algorithm) is evaluated using various parameters like average throughput, packet delivery ratio and end to end delay. It is compared with state-of-art techniques and proved to be much better in detection of malicious nodes.

Challenges in Conglomerating Fog Computing with IOT for Building Smart City

Ms Poonam Rana **Dr Kirti Walia**
Dr. Amanpreet Kaur
A.P., Department of Computer Application, Chandigarh Group of Colleges, Landran, Mohali Punjab
Professor, University Institute of Computing, Chandigarh University, Gharuan, Punjab
Associate Professor, IT Department, Chandigarh Engineering College, Landran, Mohali, Punjab

Abstract

IoT and Fog Computing are the latest solutions that help in better analytics and decision-making for many of the market domains. The Internet of Things (IoT) is a term used to signify the number of devices or objects that are attached together using an Internet connection. Fog Computing is a decentralized and flexible system that helps to deliver and transport data and useful information across the Cloud and IoT. Fog computing's goal is to locate basic computation services at the edge of the network where they are needed this helps in the reduction of the distance the data has to travel resulting in an increase in the performance. Fog computing enhances the concept of Cloud Computing. There are various Cloud services available in the market viz Microsoft Azure Cloud, Amazon Web Services, Google Cloud, Alibaba Cloud, IBM Cloud, etc. IoT and Fog Computing go hand in hand and work together in providing an overall better IoT service. This paper discussed the benefits of using Fog Computing and IoT together in Minimizing latency, Conserve network bandwidth, less operating cost, more security, more reliability, and many more for building smart infrastructure for cities.

Speech Enhancement Techniques in Perceptive of Hearing Aid Design

Hrishikesh Vanjari **Mahesh Kolte**

Pimpri Chinchwad College of Engineering Pune, Maharashtra

Abstract

Speech is an essential method for communicating with people. Understanding speech in a non-ideal environment is a challenging issue for a hearing disabled. Hearing instruments address this problem and use various algorithms to improve the speech perceptibility for hearing disabled. Compressive sensing (CS) is one such algorithm. This work compares the effectiveness of compressive sensing for speech enhancement with other tradition algorithms like spectral subtraction, Wiener filter etc. Comparative analysis is done for speech distorted with various types of noises in real world. The effectiveness of the algorithms is measured in terms of speech quality parameters of: Perceptual Evaluation of Speech Quality (PESQ), Mean Opinion Score (MOS), Processing time and Segmental Signal to noise ratio (seqSNR).

IoT Security Challenges in Cloud Environment

Anupam Bonkra **Pummy Dhiman**

CGC & Chitkara University

Abstract

IoT plays a critical role in every industry, from homes to retail. The internet of things was first established in 1998, and since then, it has become a term in every profession. Smart sensing applications prove the IoT as a dynamic global network infrastructure.. The limited resources of IoT devices pose a hindrance to the swift expansion with application of IoT technology in all areas of existence The growth of IoT technology, on the other hand, can be aided by combining it with cloud computing. As a result, a new computer domain known as IoT Cloud or CloudIoT has emerged. As a result, data unruffled via IoT technology is accumulated and evolution in the cloud environment, allowing IoT technologies to be free of resource constraints. As a result, work on some advanced aspects of shelter and seclusion issues has begun. This article discusses various Cloud-IoT security challenges and how data on the Cloud-IoT platform might be protected.

Indirect Adaptive Inverse Control Based on Modified Variable Step Size Fractional Least Mean Square Algorithm

Rodrigo Noronha

Federal Institute of Education, Science and Technology of Maranhão

Abstract

This work proposes a new methodology of Indirect Adaptive Inverse Control (IAIC) via Modified Variable Step Size Fractional Least Mean Square (MVSS-FLMS) algorithm. The main objective of this work is to analyze the performance of MVSS-FLMS algorithm in IAIC design, in terms of convergence speed of the controller weight vector and steady-state Mean Square Error (MSE) of the error used to update the estimate of the controller weight vector. The results obtained in IAIC design through MVSS-FLMS algorithm were compared with the results obtained through Fractional Least Mean Square (FLMS) algorithm. As a complexity scenario, the proposed methodology was evaluated on a non-minimum phase plant in the presence of a sinusoidal reference signal and sinusoidal disturbance signal added to the control signal.

Attacks Opportunities in the Cyber Physical Space and the Role of Cybersecurity

Navansh Aggarwal **Bhawana Tripathi**
Diksha Chottani **Pardeep Singh Tiwana**

Department of Information Technology Chandigarh Group of Colleges Landran, Mohali, Punjab

Abstract

Technology is coming into our everyday lives and the way fast our bodily and our on-line world are beginning to come together. It will assist you find out how our on-line world, basically a digital world, is beginning to turn out to be a truth with our growing reliance on it. It particularly specializes in a number of the extreme worries which can be additionally developing with this spatial integration, some examples of ways a few cyberattacks cause deaths in actual life, given the quantity of assault may be an actual chance and the way smooth its miles to execute such attacks. This paper elaborated the all locate methods to mitigate such attacks, however, particularly speak the seriousness of this integration.

Investigation of SLA Management in Cloud Computing and Future Directions

Mandeep Singh **Shashi Bhushan**
Shanky Rani
Chandigarh Engineering College, Landran, Mohali

Abstract

Cloud computing is an on-demand service provisioning technology in which computer and networking resources like software applications, computation power, storage space and software-based network devices are provided to the customer under a service level agreement (SLA). In dynamic environment of cloud computing service level agreement and its management is very crucial component from customer's trust and long term business opportunity point of view. The SLA management process includes many activities such as SLA Negotiation, SLA Pricing and SLA Monitoring etc. Many SLA management approaches have been proposed by researchers. This paper systematically investigates different research publications branching form SLA management into different directions and assesses the relative extent of research done so far in each direction. The analysis reveals that latest trends in SLA related research are SLA violations, Auditing, and development of SLA frameworks.

Closure Properties of General Jumping Finite Automata

Harjot Singh **Amandeep Ummat**
Jashanpreet Singh
Chandigarh Engineering College, Landran, Mohali

Abstract

The present paper suggests a new disquisition space in automata proposition – Jumping Finite Automata. This automata functions unlike traditional finite automata because they recite input words discontinuously — that is, afterward examining a symbol, they can go to some symbols within the string and carry on their calculation from there. The paper founds numerous results regarding jumping finite automata in relations of generally delved regions of automata proposition, similar as closure properties. Some of these properties of General Jumping Finite Automata (Kleene star (K)* and Kleene plus (K)+) and mirror image which are not yet defined are also debated here.

Provide Society easier Cloud based e-health system

Shanky Goyal, Navleen Kaur
Mandeep Devgan Amitabh Sharma
Chandigarh Engineering College, Landran, Mohali

Abstract

Today's date, globalization and online system are must. But still when we feel sick and we move to the hospital then we have to give complete details of our medical history every time to each doctor and also explained what kind of medicine we are taking. Secondly, if we have very minor problems, still we have to stay in queues for long time. To solve these both problems, we are providing hardware and cloud solution. Cloud will be helpful for storage of medical history of each patient and hardware will be used for two purposes –one is to detect patient id and secondly to provide voice assistant solution for his basic problem based on machine learning solution. We can also add infrared based temperature measuring solution in this h/w device. This solution will also helpful in research and legal problems of doctors.

Evaluating the Effectiveness of Various IR Models for Requirements Traceability

Manpreet Kaur Harpreet Kaur
Chandigarh Engineering College, Landran, Mohali

Abstract

A frequently asked question during software devel- opment life cycle is: "Which source code document(s) imple- ment requirement X?" Requirements traceability (RT) involves uncovering links between source code entities and requirement specification documents. Information Retrieval (IR) techniques are used to perform requirements traceability. There has not been many studies that determine the effectiveness of various IR techniques in terms of precision, recall and ranking on big data. In this paper, we compare standard vector space model, probabilistic approach based Jensen-Shannon similarity model and dimensionality reduction based Latent Semantic Indexing model on 10 open source software systems in terms of precision, recall and ranking.

Detection of DDoS Attacks using Semi-Supervised based Machine Learning Approaches

Umang Garg, Neha Gupta
Maninder Kaur Malvika Kaushik
Chandigarh Engineering College, Landran, Mohali

Abstract

Distributed denial of service or DDoS attack is a kind of network attack that is used to destroy the normal operations of the server and its responses. There are several approaches through which we can detect the abnormal behavior of the network traffic. However, machine learning techniques are best used techniques for the detection and identification of DDoS attack. This attack is regarded as one of the most serious threats to the internet. Supervised machine learning algorithms rely on the availability of labelled network traffic datasets. Attacks, on the other hand, are identified in unsupervised approaches by analysing incoming network traffic. These techniques face challenges like less accuracy, classification issue, falser positive rate, more network data. The semi supervised ML approaches are presented in this work for the detection of DDoS which is based on the estimation of network entropy, information gain ratio, co clustering as well as Random Forest algorithm. The irrelevant normal traffic data is reduced with the unsupervised part of this approach for the detection of DDoS which also allow the reduction of false positive rates and also the accuracy is increased. On the other hand, further reduction of false positive rates of unsupervised part is done by the part which is supervised and the DDoS traffic is also accurately classified.

Review on Agriculture Field Monitoring using Wireless Sensor Network

Parneet Kaur **Pooja Sahni**
Sachin Bhardwaj
Chandigarh Engineering College, Landran, Mohali

Abstract

The main purpose of this paper is to develop an agriculture monitoring system using Wireless sensor network (WSN) that is an upcoming concept to improve the productivity and quality of farming. The wireless sensor network is a new concept that provides a processed real data by sensor nodes which physically dispersed in the area. Temperature, humidity and moisture grade system provision spirit level are the most important factors for the productivity, growth, and quality of works in agriculture. The sensing element has to transmit the gathered info through the wireless communicating electronic network to the data server. The Internet of Things (IoT) gateway is in the mission of the communicating between the remote constraint serial publication twist and central control system. With the help of wireless sensor network, we are able to obtain the values of moisture, humidity, and temperature as a simple device is required by which the farmers can measure all the various factors and check the value at the real time. In order to improve the efficiency of the data collection procedure in the agriculture field and also to improve the precision along with agricultural operations, it is necessary that to have an automated system that collects environmental data. With the continuous monitoring of many environmental parameters, the raiser can analyze the optimal environmental conditions to achieve maximum crop Cartesian productiveness, for the better and to achieve remarkable energy savings.

Investigations on Huffman Coding for Compression of Bit Stream

Dishant Khosla **Sohni Singh**
Anuj Kumar Gupta **Tejpal Sharma**
Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

Compression techniques are nowadays becoming an eminent part in the era of computers due to wide growth in Multimedia and Internet. Assimilation of different types of computer data is the result of wide popularity of Multimedia. Multi-media combines many data types like graphics, text, animations, still images, audio and video data. Data Compression mrthods for different kinds of data do exist. Huffman Coding is a entropy or source of coding technique which tries to minimize the average length of messages in data and in turn reduces redundancy and also provides compression. This paper provides an overview of using the Huffman Coding in the compression of bit stream through the use of one or more other types of compression techniques.

A Review on Steganography and its Techniques to Enhance Security

Kamalinder Kaur

Chandigarh Engineering College, Landran (Punjab) Mohali

Abstract

Steganography is the art and science of escaping information under unremarkable cover. In this paper the various techniques used to hide the message inside the images. The steganography systems are using secret key for cryptography. Steganography quality measures and techniques are often used to attain security as they are basic features of the information hiding system to hide the message.

A Novel Approach to Find Circular Object from Various Shaped Objects in an Image

Tejpal Sharma **Manvinder Sharma**
Jagbir Singh **Joginder Singh**

Chandigarh Engineering College, Landran (Punjab) Mohali

Abstract

In the computer vision, fast and accurate detection of an object is challenging. Detecting a circular object in a cluttered image has always been a problem. Circular object detection has wide applications in the field of biometrics, automobile and other mechanical production industries. The traditional existing circular object detection are maximum likelihood estimation (MLE) and voting based methods. The voting based methods have high memory requirements and more computational complexity while these are less sensitive to noise. MLE approach consumes less memory and are efficient in terms of computational complexity but these approaches are more prone to noise. This paper proposes modified Hough transform based algorithm for detection of circular objects in cluttered image. The algorithm efficiently detected the circular objects in the image with very less computational time and less memory consumption.

Moving from Databases to Cloud Database: Futuristic Trends

Gurpreet Singh **Shivangi**
Sumit Kumar **Sunil Chawla**
Chandigarh Engineering College, landran (Punjab) Mohali

Abstract
This paper provides a review of various generations of databases along with their features, advantages and limitations. We tried to cover major generations of databases and their area of utilization. Through this paper we tried to provide a review of various databases for various researchers in this area and by the end of this paper we provide the future scope in terms of next generation databases.

Design, Modeling of Ga-As based MESFET for SRAM Cell

Manvinder Sharma **Anuj Kumar Gupta**
Dishant Khosla **Jagbir Singh Gill**
Hauwa Amshi
Chandigarh Engineering College, Landran (Punjab) Mohali

Abstract
The main attention in the area of technology is given to the low power SRAM (Static random Access Memory).GaAs SRAM have been developed with great efforts which include its many advantages such as reduced power consumption and temperature tolerance. There are many limitations of conventional cell which are overcome by the design of new cell which is used to simulate SRAM. The structure of MESFET and the limitations are discussed in the paper. Further, a code in silvaco is run and simulated and the result analysis is done using tony plots.

Investigations on Millimeter Wave (mmW) Antenna for 5G Technology: Design Considerations and Applications

Sohni Singh **Manvinder Sharma**
Pankaj Palta **Anuj Kumar Gupta**
Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

The millimeter wave technology has made its way to the 5G technology as the system of 5G requires larger bandwidth, higher frequency and system capacity. In order to achieve these parameters, the millimeter wave antenna research becomes necessary. The current wireless technologies require huge bandwidth which makes the spectrum of millimeter wave a potential candidate. Microstrip antennas have always been in an increasing demand due to their exceptional performance in the applications of wireless communication. The advantages of microstrip patch antenna led to its popularity among the researchers.The technologies such as MIMO, CMOS and beam forming are used with millimeter wave antenna for improving the mobile phone performance. There are various designs of microstrip patch antenna related to 5G technology and applications in the millimeter wave band which are discussed in the paper.

Wi-Fi Security Card (WCS): A Novel Approach for Secure Payment System

Sumit Kumar
Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

The latest technology is turning into a vital element in financial business. This paper presents a proposed system called Wi-Fi Security Card (WCS) based on the very common and growing problem of electronic transaction fraud in the countries of India. To solve such problems, we have proposed a novel secure payment method known as Wi-Fi Security Card (WCS). In this paper, we also compared the WCS system to another existing system called Dropped Card Detection (DCD) and Microcontroller and Sensors (MAS). The main advancement of our system over the existing system is that WCS can also prevent fraudulent transactions. Nowadays, security issues in e-payments are usually more demanding than current security issues on the internet. Our findings may enable e-transaction providers to extend their secure payment systems by increasing their protection as necessary for appropriate financial services.

Foggy Image Detection and Filtration Methods: Review

Priyanka **Geetanjali Babbar**
Chandigarh Engineering College, Landran (Punjab) Mohali

Abstract

Image de-fogging in brightness defined to image calculated in a deprived climate like as fog, rain and ocean and pollutants or dust particles. To alter the fog and some other pollutants from the image, various methods are customized, some mainly utilized methods are DCP, Detection, and Classification of foggy images. Haze is an arrangement of dual components, air-light and DA (Direct Attenuation), low image quality and generates various issues in VS (Video Surveillance), Navigation and Target Tracking, etc. So, its removes from an image, several de-fogging approaches have been discussed in this paper. Image De-fogging can attain utilizing several and single image haze removal techniques. The famous methods are discussed in this paper used for image de-fogging in DCP, Depth-map for accurate estimation, Guided Filter, and Transmission methods. These techniques still efficient in removing haze from images have very high time complexity. The guided filter is a new region preservative filter with region enhancement and smoothing. The previous result was a local linear transformation of the Guided Image. It defines a review of the classification and detection technique of a hazy image. This method mitigates the limitations of filtration and DCP and at the same time preserves the image quality. At that time, described the existing image de-fogging methods containing image restoration, contrast improvement, and fusion-based image de-fogging methods.

A Review on Different Regression Techniques and its applications used in Machine Learning

Anmol Kaur, **Jaspreet Kaur**
Maninder Kaur
Chandigarh Engineering College, Landran (Punjab) Mohali

Abstract

Regression Analysis is an assortment of factual methods that fill in as an explanation behind drawing acceptances about associations among the various interrelated elements. This technique is pretty much applicable in almost everywhere in study field which includes biological sciences, social studies and relapse examination. The main purpose of this research paper is to evolve the vital hypothesis for the factual Regression Technique and also to demonstrate the hypothesis with a collection of wide variety of various models looked over economical aspects, demography, sketching and engineering concepts. To assemble the relevant content which is independent from various insights, mathematics based on variable and numerical investigation is included.

The Future of Scheduling in Cloud Computing: Metaheuristic Approaches

Gaurav Goel **Komal**

Chandigarh Engineering College, Landran (Punjab) Mohali

Abstract

Cloud computing has grown in importance and popularity as a platform for delivering services on-demand. It is available on basis of pay-per-use. The fundamental objective of a cloud service provider is to make effective use of resources by lowering execution time, cost, and other parameters while boosting profit. As a result, in cloud computing, adopting effective scheduling algorithms is still a significant challenge. There is no comprehensive research of cloud computing scheduling mechanisms that cover both deterministic and optimal techniques. This article explains the most often used scheduling algorithms in cloud systems, the factors that they focus on, and the simulation settings used to assess performance. It also includes brief descriptions of numerous metaheuristic approaches and the review structure, sources utilized, inclusion and exclusion criteria, and extracted data information. Finally, this study discusses the typical limitations discovered during the evaluation.

Trust-Based Security: Advancement towards Protection of the Adhoc Network

Samita Dhiman **Dr. Manish Kumar**

Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

MANET (mobile ad hoc network) is a collection of mobile nodes that interact without the need for a fixed physical foundation. MANETs have grown in popularity as a result of characteristics like dynamic topology, quick setup, multi-hop data transfer, and so on. MANETs are well-suited to various real-time applications, including environmental monitoring, disaster management, and covert and military operations, because of their distinguishing characteristics. MANETs may also be used in conjunction with new technologies like cloud computing, IoT, and machine learning algorithms to help realize the vision of Industry 4.0. Secure and reliable data transfer is essential for any MANET-based sensitive real-time applications that must achieve the requisite QoS. It is challenging to provide safe and efficient data transfer with MANET. As a result, this article examines different Trust-based Approaches that take a step forward in providing secure transmission while simultaneously improving MANET performance. Furthermore, the study's analysis based on many aspects exposes the inadequacies of existing techniques and provides future directions for improvement.

Analysis of Various Network Traffic Classification Techniques

Shivam Puri **Sukhpreet Kaur**

Chandigarh Engineering College, Landran (Punjab) Mohali

Abstract

There are several interconnected entities present within the networked data for which the generation of inferences is important. For instance, hyperlinks are used to interconnect the web pages, calls are used to link the phone accounts, and references are used to connect the research papers and so on. Almost every existing application includes networks within it. The daily lives of individuals include social networking, making financial transactions, generating networks that show physical systems and so on. The manner in which the nodes present within the system influence each other can be known through this research. On the basis of observed attributed of an object within the system, another attributed is predicted using new model. The various network traffic classification techniques are reviewed in terms of certain parameters.

Comparative Research on the Techniques of Electricity Fraud Detection Using Different Machine Learning Techniques

Maninder Kaur **Samarth Chawla**

Ruhi Dua

Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

The vulnerability of power theft has hampered the electricity industry for decades. It obstructs social progress by having varying degrees of impact on home, commercial, and industrial customers. Sneak thieves have caught up with contemporary metering systems, putting electricity suppliers in trouble financially. This comparative analysis is the first step in the presentation of principles. Theft of electricity has serious consequences for the power grid's proper operation as well as the economic benefits of power corporations and commercial power service providers. An effective anti-power-theft algorithm is required for tracking power usage statistics in order to detect electricity power theft. In this literature review, we differentiate the Support Vector Machine (SVM) algorithm with other techniques for detecting abnormal usage among consumers (i.e., electricity fraudsters) in time-series data on power consumption. The results show some combinations can reach significantly better values than others, comparing both the balancing techniques for a same machine learning method itself as well as comparing these combinations between themselves.

A New Wave in Biometric System: Systematic Study

Saumya Rajvanshi **Shiv Chauhan**
Savneet Kaur
Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

Biometric system is a technique used to identify a person using its personal identification methods. The main concept of biometric systems is to provide confidentiality and security to the user. A number of biometric systems are introduced but some systems are widely used and are famous because of their usage and security they provide. Physiological and Behavioral biometrics are the two types of biometric systems. Biometric systems include physiological biometrics like face recognition, fingerprint recognition, iris recognition and behavioral biometrics like signature recognition and voice recognition. All these recognition systems are discussed in this research paper. Biometric systems work on three levels: Enrollment, Verification, and Identification. Enrollment is the process in which patterns are captured from the user and stored in the database. Verification means to confirm that the sample entered by the user belongs to him or not. When the user wants to access the data then the user must use his/her biometrics so that the system checks that the person who wants to access the data is the real owner of the data or not. This process is identification. All three levels are the working levels of the Biometric System. In earlier years, biometrics were used only at ground levels to provide basic security to data but now the tables have turned. It is playing a major role in providing security to our data. Biometrics are not only used in day-to-day life in phone unlocking, phone assistants, attendance systems but also used at advanced levels like in airports, border security, cloud computing etc. In this research paper, we will discuss the future scope of biometric systems and how it could even change the future

Data Encryption Using Morse Code

Aditya Pathak **Anmol Kaur Saga**
Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

Cryptography in general means hiding, while in technical terms cryptography means protecting data from unauthorized access of someone, or cryptography can be considered as a method that ciphers the data so that the data can neither be read nor understood by humans. With the increasing level of internet consumption, the security of our data is the main concern. Due to increasing cyber-attacks, and over-relying on the internet, a lot of users' data has been compromised. This has brought our attention to data security and cryptographic algorithms. Data security ensures the data of users is not being compromised and is present in such a format that an intruder won't get access to our data, it ensures that the data is accessible to the intended user only, and anybody else can neither read nor change the data. To achieve such security, some algorithms or processes are needed. One such algorithm can be derived using Morse code since data in Morse code uses dots and dashes to represent alphabets and numbers. Even if such encryption is used directly, it may cause some threat to the user'sdata as anyone with knowledge of Morse code can easily decrypt it, so to get more safety, the encrypted data is needed to be encrypted again with some other algorithm. Now, other than data safety, the safety of the algorithm is also required, as if someone gets to know about the algorithm, they can decrypt the data. The Python programming language provides a module named Cryptography in which Fernet can be used to encrypt the algorithm file as well as the data file again. Cryptography in python uses a symmetric encryption technique, i.e., it uses the same key to encrypt and decrypt the data. This technique is faster compared to asymmetric techniques.

Survey on Self Driving Vehicle

Harsh Sharma **Shanky Goyal**
Navleen **Anupam**
Sachin Majithia
Chandigarh Engineering College, Landran (Punjab) Mohali, India

In this paper we have done survey about technology of self-driving vehicles also known as autonomous vehicles. Along with this we are going to summarize the future of technology based on benefits and problems. In between the process we also found some important levels of this technology. This idea is already implemented in many foreign countries. And it has been proved worthful and successful also. So here, we will discuss about some of the basic info about this technology, levels, impacts, some communication on this topic in other countries along with the final conclusion. That whether it should be implemented more or not and our analysis shows that there is a huge scope in future with the advancement in technology day by day. Finally, it concludes a positive response to this autonomous technology.

Survey on usage of Machine Learning in Genomic Medicine

Shanky Goyal **Harsh Sharma**
Navleen Kaur **Anupam**
Sachin Majithia
Chandigarh Engineering College, Landran (Punjab) Mohali

Abstract

This paper provides a preface of machine learning as a task that can be used to solve some important problems pertaining to genomic medicines. The genomic medicine can determine the risk of different disease in an individual due to the variation in the DNA. Genomic medicine can help to find out the therapies. We, here, concentrate on the ways in which machine learning can aid in determining the link between the DNA as well as number of key molecules present inside a cell with the assumption that the numbers may be related to the disease risks, which can also be referred to as cell variable. The field of the Modern biology allows high rate of production measurement of cell variable which covers up gene expression, splicing, and the procedure of protein binding with nucleic [8] acids, and these all treated as training targets for the predictive models. In today's date, large amount of data sets are available on which we can apply different computational techniques that can help researchers to work hard on solution of genomic medicines

Performance Optimization of IOT Networks Using Frequency Hopping

Dr. Parminder Singh **Amanpreet Kaur**
Mandeep Singh Devgan **Harpreet Kaur Toor**
Chandigarh Engineering College, Landran (Punjab) Mohali

Abstract

Internet of Things- where 'things'- sensors and devices transmit data directly to the internet i.e. these devices only capture the data and send the information to the servers. With multi-hop wireless networks, communication between two end nodes is carried. Multi-hop routing involves sending signals through multiple stops instead of one which leads to frequency overlapping and the data get loss i.e. performance of sensors is not up to mark. So, we are using frequency hopping instead of multi-hopping by which it improves the performance of wireless sensor devices. In this paper, we have to use network simulator tool for evaluating the IOT networks and calculates the metrics like throughput and delay.

Review Various Technologies used to Manage Traffic Management System using IOT

Prince Goyal **Shanky Goyal**
Navleen Kaur **Astha Gupta**
Chandigarh Engineering College, Landran (Punjab) Mohali

Abstract

Internet of things (IoT) is the network of the devices includes the updating in technology, various devices are using sensors, actuators, embedded computing and cloud computing. This type of system leads to smart architecture in the home, cities and smart world. IoT plays an important role in traffic controlling and managing. In this paper, we give an overview of the various methods of traffic control management. With the help of this IOT kit, which includes different sensors to collect the data and process it accordingly with the help of big data analysis and deep learning algorithms, most accurate and efficient results are obtained for traffic management.

Software Security: Role in SDLC

Shanky Goyal **Navleen Kaur**
Sachin Majithia **Mandeep Singh Devgan**
Pardeep Kumar
Chandigarh Engineering College, Landran (Punjab) Mohali

Abstract

This research emphasizes mainly on the need for software security. Softwares are developing at a faster pace so it is required to impose security on them in order to secure them from cybercrimes. Softwares have been facing problems by the attackers who are constantly kept on breaching the Data. Therefore this survey comprises the phases that are an integral part of the SDLC from the security point of views such as Design and testing phase. Moreover, it quests upon the data related to threats and attacks. Not only this, but it also involves the prerequisites that have to be determined before developing the software like, what are the approaches that should be followed and what are the best suitable designs to secure the software?

Teaching Learning Based Optimization (TLBO) for Energy Efficiency in Fog Computing

Amanpreet Kaur **Heena Wadhwa**
Pardeep Singh **Harpreet Kaur Toor**
Chandigarh Engineering College, Landran (Punjab) Mohali

Abstract

Fog Computing is eminent to ensure quality of service in handling huge volume and variety of data and to display output, or for closed loop process control. It comprises of fog devices to manage huge data transmission but results in high energy consumption, end-to end-delay, latency. In this paper, an energy model for fog computing environment has been proposed and implemented based on teacher student learning model called Teaching Learning Based Optimization (TLBO) to improve the responsiveness of the fog network in terms of energy optimization. The results show the effectiveness of TLBO in choosing the shortest path with least energy consumption.

Safety Message Dissemination in Cloud-VANET based Infrastructure through Game Theory

Deepika Verma **Parminder Singh**
Amanpreet Kaur **Harpreet Kaur**
Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

Vehicle ad hoc networks are usually equipped with electronic chips that store a lot of sensitive information. Stores information related to routing tables, packet, packet header information, uplink and downlink speed. Many studies emphasize on transmission delays, data redundancy, queue delays and buffer management. The existing scenario collects results while transmitting packets from the source machine to the destination machine. In the enhanced view, collect results from a remote server located in a rural area. Data was collected through a cloud-based infrastructure. In this paper, we propose a framework for message propagation and provide security to end to end semantic. The benefit of this framework is to provide correct information to the end user through cloud technology. This hybrid model is capable of facilitating communication for cellular based infrastructure. To evaluate the proposed model, we collect the results from the NS2 simulator.

Business Intelligence in Banking: A Study of Bi Technology Implementation And Challenges

Simrat Kaur Brar, **Navdeep kaur,**
Anuradha Saini
Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

In today world every manager need more accurate and timely information in order to make effective decisions. With the existed systems they were not able to make fast decisions. Business intelligence (BI) technology is the solution for this problem of managers. Specifically in the banking industry there is a huge amount of data, which should be effectively used for different applications. Business intelligence technology is the solution for this problem as it provides various business data mining tools. This research paper tries to identify the most important areas of improvement of BI processes and strengths of BI processes in banking industry.

Securing Wireless Lan by Boosting Intrusion Detection Techniques

Inderpreet Kaur **Navneet Katoach**

Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

The Wireless Fidelity (Wi-Fi) is a widely adopted technology due to its mobility and freedom in the presence of vulnerable security features. Several attempts have been made to secure Wi-Fi that ends up as the devices are vulnerable to various types of attacks and intrusions. Thus, the additional use of an external defense mechanism like Intrusion Detection System (IDS) is mandatory to secure WLAN. The Intrusion Detection Technique identifies the security threats by continuously monitoring the network activities. Many security threats affect the performance of network threats like Authentication attacks.

Encryption cracking, Wormhole, Selective Jamming attack etc. Jamming attack is always an issue in wireless network. In jammingattacks the target node is adversely affected with proper internal knowledge of network secrets and routing protocols and these types of attacks launched at low intensity so that they are very difficult to detect and encounter. So, to reduce the attack and algorithm is developed that helps in tracking the intrusion and then mitigating the attack. In NS2 simulation environment, results represents the network performance without Jamming attack and with Jamming attack and also if the Jamming is encountered how to save from that and by applying the proposed scheme the performance is very much like that no attack has even occurred. Main goal is to prevent the attack and check the various parameters after the attack is prevented.

Proposed Upbeat Digital Forensic Method For Cloud Computing Impression

Ravi Kumar Sharma **Inderpreet Kaur**

Chandigarh Engineering College, Landran (Punjab) Mohali

Abstract

There are various challenges for the electronic logical method in the appropriated processing in view of the perceived features of the disseminated figuring condition. Immense quantities of remarkable automated logical procedures and instruments are not sensible for dispersed registering condition. The multitenancy, multi-accomplice, Internet-based, components pointlessness, and gigantic data, logs and datasets are examples of the disseminated figuring condition incorporates that make driving propelled wrongdoing scene examination in the circulated registering condition an extraordinarily problematic task. Thusly, there is a need to develop a fitting modernized quantifiable technique for circulated registering condition. Thusly, this paper proposed a proactive mechanized quantifiable procedure for conveyed figuring condition.

Performance Test of Wap Gateway Over Web Server Using Opnet

Chamkaur Singh **Preet Navdeep Kaur**
Anuradha Saini **Navneet Katoach**

Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

The Security for the portable devices such as mobile phones,iPad and laptops becoming extremely important day by day.The intermediates such as gateway are the main source for communication through wireless media. In today's era, maintaining the transport level security amongst cellular devices like mobile phones and PDA(Personal Digital Assistant) become the most burning issue.During communications of smart phones with the web server through broadband method pass communication through the gateway known as Wireless Applications Protocol. The main purpose of WAP gateway is to transfer all the protocol used in WAP to the protocols used on the internet server. The WAP proxy server uses marshalling and unmarshalling methodology for the content to reduce the size of the data that has been sent through the wireless link. Further, the communication between the mobile phones and wireless application protocol is secured by using the security protocol called WTLS. The communication between the WAP gateway and web server is secured through the TLS/SSL security protocols. This paper simulates an assessment of wireless and wired networks using O PNET simulation tools. This paper simulated 2 different scenarios comparing wireless mobile client communication using WTLS gateway MD5_RSA encryption and Firewall gateway TLS encryption using MD5_RSA.The investigation results shows how the end to end security takes place between wireless clients to web servers using hybrid security protocol.

Explore in Teaching Using Data-Mining Technique

Ravi Kumar Sharma **Simrat kaur Brar**
Rahul Gaba
Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

As an interdisciplinary order, information mining i(DM) is famous in training territory particularly while inspecting understudies' learning exhibitions. It centers on breaking down instructive related information to create models for improving students learning encounter and upgrading institutional adequacy. Subsequently, DM helps schooling organizations give top notch training to its students. Applying information mining in training otherwise called instructive information mining (EDM), which empowers to more readily see how under studies learn and recognize how improve instructive results. Present paper is intended to legitimize the capacities of informato mining approaches in the recorded of training. The most recent patterns on EDM research are presented in this Survey. A few explicit calculations, strategies, applications and holes in the current writing and future experiences are talked about here.

A Detailed Review of Service Level Agreement Management in Cloud Computing Environment

Gurveer Singh Dhaliwal **Varinder Singh**
Renu **Meena Devi**
Chandigarh Engineering College, Landran, Mohali

Abstract

Cloud computing is an on-demand service provisioning technology in which computer and networking resources like software applications, computation power, storage space and software-based network devices are provided to the customer under a service level agreement (SLA). In dynamic environment of cloud computing service level agreement and its management is very crucial component from customer's trust and long-term business opportunity point of view. The SLA management process includes many activities such as SLA Negotiation, SLA Pricing and SLA Monitoring etc. Many SLA management approaches have been proposed by researchers. This paper systematically investigates different research publications branching form SLA management into different directions and assesses the relative extent of research done so far in each direction. The analysis reveals that latest trends in SLA related research are SLA violations, Auditing, and development of SLA frameworks.

Resources Scheduling For Optimal QoS in Fog Environment for 6G Network-Recent Trends and Future Opportunities

A Deepa **Ruchika Vij**
Namita Sharma **Harsimran Kaur**
Chandigarh Engineering College, Landran, Mohali

Abstract

In the era of 6G cellular networks Internet-of-Things, smart industries, and smart cities will continuously expand at the fastest rate. With the advancement of cellular networks, it becomes difficult to achieve the desired QoS in the Fog systems. Because these QoS parameters are impacting cellular network processing. In the traditional system, various researchers have suggested different resource scheduling and optimization techniques like optimization algorithms include Particle swarm optimization, Ant Colony Optimization, Genetic algorithm, Bees Swarm, Firefly and crow, cuckoo optimization, and optimization techniques includes prioritized task scheduling and En-lob, etc. However, still, there is a scope to reduce Bandwidth, latency, energy consumption, and total communication cost in the Fog environment. Still, there is requirement to manage the resources in Fog environment is a major challenge due to the limitation of resources, heterogeneous nature of the devices, dynamic nature, and unpredictability in fog environment. in this work discussion is done on various performance challenges that are experienced in the Fog Environment based on 6G networks and explore the role of optimization techniques to overcome these challenges. in this work discussion is done regarding some traditional resource scheduling algorithms, regarding the management of resources and what will be the QoS parameters to be followed during designing of Fog environment and what optimization techniques are required in the scenario for achieving QoS parameters for 6G Network.

Relational Database Watermarking Overview

Aanchal Gupta **Rumeet Kaur**
Namrata Chopra **Harsimranjot Kaur**
Chandigarh Engineering College, Landran, Mohali

Abstract

Watermarking is used to protect multimedia data over past years. Now a day's its use is extended to relational database to secure copyright ownership and data content integrity. This paper, surveys recent database watermarking techniques focusing on the importance of watermarking relational database, the difference between watermarking relational database and multimedia objects, relational database watermarking issues, type of attacks on watermarked database, classifications and distortion introduced and the embedded data. This study explores the current issues in watermarking relational database as well as the significant differences between watermarking multimedia data and relational database material. Finally, it provides a brief of database watermarking techniques according to the methods of selection of the candidate key attributes and tuples, distortion introduced and previously applied decoding techniques.

Eliminating False Positive Alarams from An Intrusion Detection System Hybrid Approach

Aayushi **Rupinder Singh**
Nancy Garg **Himani Chugh**
Chandigarh Engineering College, Landran, Mohali

Abstract

The aim of intrusion detection systems (IDS) is to detect the malicious traffic and dynamic traffic which changes according to network characteristics so Intrusion detection system should be adaptive in nature. Many of IDS have been developed based on machine learning approaches. In proposed approach experiment on KDD-99 dataset with three classes DOS attack, other attacks and normal (without any attack). Paper checks the potential capability optimization based features with artificial neural network (ANN). classifier for the different types of intrusion attacks. A comparative analysis with ANN and Other optimizer with ANN. The experimental results show that the accuracy of intrusion detection using particle swarm optimization with genetic algorithm (PSO_GA) improves the results significantly by reducing false positive alarms and also improve individual class detection.

Systematic Scrutiny of Busy Beaver

Abhishek Sharma **Sachin Raghav**
Nandita **Inderjot Kaur**
Chandigarh Engineering College, Landran, Mohali

Abstract

Since 1962, when Tibor Rado proposed the Busy Beaver function, it has attracted the attention of many researchers and several contests were organized trying to produce good solutions. This paper describe a problem of Rado on Turing machine now known as the Busy Beaver problem. This problem involves the search for the Turing Machine that produces the maximum number of ones when started on a blank tape. The aim of this paper is to undertake the systematic review on the Busy Beaver. The study was carried out using a theoretical hard problem of Busy Beaver.

Speculating the Superconductive Electronic Transport of C20 Fullerene by Varying the Shape of Electrodes

Ajaybeer Kaur **Sakshi**
Navdeep Kumar Chopra **Indu**
Chandigarh Engineering College, Landran, Mohali

Abstract

In this paper, we contemplate the superconductive nature of electron transport of largest curvature fullerene C20, sandwiched between two semi-infinite gold electrodes.We have presented twonovel electrodes shapes in this paper, which were carved out of the simple fcc geometry. The geometry optimization for the proposed work has been carried using the Gaussian-03 and further work was carried out using Extended Hückel Theory (EHT) within Non-Equilibrium Green

Function (NEGF) formalism to elucidatesub- zero temperature transport characteristics at variegated applied bias. We evaluated Transmission spectra, I-V curves, Conductance curves for new shapes of electrodes and compared these with simple fcc geometric electrodes. The results clearly demonstrated the superiority of fcc geometric electrodes at very low temperatures but more importantly unfolds the new field of molecular electronics called “Geometronics” for advanced applications like flexible probes for nano electronic measurements and more such challenges in future.

An Effective Load Balancing Algorithm for Cloud Data Centers

Anil Malik **Saloni Sharma**
Navpreet Kaur **Ishdeep Singla**
Chandigarh Engineering College, Landran, Mohali

Abstract

Cloud service provider□s main aim is to provide better services to cloud customer and proper utilization of thecloud resources in data centers, such that energy consumptioncost and SLA violation rate are to be minimized. In this paper our approach is to obtaining future CPU load information in advance. As CPU is the key factor for the performance of application. So CPU load prediction is one of the most important aspect in the cloud resource provisioning. We propose two different CPU load prediction approaches based on Linear Regression and Support Vector Regression technique, which are suitable for dynamic characteristics of cloud applications and complex cloud computing environment.The proposed approach approximate the short time future CPU utilization based on the history of usage in each host. Planetabreal workload has been considered for testing the performanceof our proposed approaches. Experimental results show that the proposed techniques can significantly minimize the energy consumption cost and SLA violation rate.

A Review of Autonomic Computing: Self -Managing Concept

Anjana Sharma **Neetika Gupta**
Ishpreet Singh Virk
Chandigarh Engineering College, Landran, Mohali

Abstract

The increasing scale complexity, size, heterogeneity and dynamism of networks, systems and applications have made the need of an autonomic computing. The goal of autonomic computing is to realize computer and software systems andapplications that can manage themselves without the intervention of humans. Inthis paper the characteristics, conceptual model, architecture, evolutionary levelsand challenges of the autonomic computing are described.

Tumor Detection in Brain using Genetic Algorithm

Ankita Sharma **Sapna Rikhi**
Neha **Ishta**
Chandigarh Engineering College, Landran, Mohali

Abstract

Detection of brain tumour is very common fatality in current scenario of health care society. Image segmentation is used to extract the abnormal tumour portion in brain. Brain tumor is an abnormal mass of tissue in which cells grow and multiply uncontrollably, apparently unregulated by mechanisms that control cells. Several techniques have been developed for detection of tumor in brain. Our main concentration is on the techniques which use image segmentation to detect brain tumor. Tumor classification and segmentation from brain computed tomography image data is an important but time consuming task performed by medical experts.

Error Recognition in OCR

Ankur Singhal **Sapna Saini**
Neha Sharma **Jaspreet Sidhu**
Chandigarh Engineering College, Landran, Mohali

Abstract

This report describes two experiments in finding errors in optically scanned Swedish without lexicon. First, statistics were used to find unexpectedly frequent trigrams and correction rules were created. Second, Bengt Sigurds model of Swedish phonotax was used to detect words with phonotactically illegal beginning or end. The phonotax did not perform as well as the statictic rules did on their training material, but outscored them by far on new text. A correction tool was created with the phonotax as means of error detection. The tool displays every occurrence of an error string at the same time and gives the user the possibility to give different corrections to each occurrence.This work shows that it is possible to find errors in optically scanned text without relying on a lexicon,and that word structure can provide useful information to the correction process.

Remote Body Area Network Security and Privacy Issue in E Healthcare

Anu Gupta **Sarita**
Nidhi Bhatla **Jaspreet Singh**
Chandigarh Engineering College, Landran, Mohali

Abstract

Remote Body Area Network (WBAN) is an assortment of remote sensor hubs which can be put inside the body or outside the body of a human or a living individual which in outcome notices or screens the usefulness and connecting circumstances of the body. Using a Wireless Body Area Network, the patient experiences a more prominent actual adaptability and is never again compelled to stay in the clinic. As the Wireless Body Area Network sensor gadgets is being used for social event the delicate information and conceivably will run into adversarial circumstances, they require confounded and extremely secure security medium or construction to stay away from the nasty correspondences inside the framework. These gadgets address different security and security assurance of tricky and private patient clinical information. The clinical records of patients are a critical and a perplexing circumstance because of which a changing or abuse to the framework is conceivable. In this exploration paper, we first present an outline of WBAN, how they used for medical care checking, its design then, at that point, feature significant security and protection prerequisites and attacks at various organization layer in a WBAN and we at long last discussion about different cryptographic calculations and laws for giving arrangement of safety and protection in WBAN.process.

A Systematic Review of Statistical Process Control Techniques in Industry

Apoorva **Satwinder Kaur**
Nidhi Chahal **Kamna**
Chandigarh Engineering College, Landran, Mohali

Abstract

Inordinate change ability in process execution frequently brings about waste and revise. For development in quality and profitability process variation should be decreased. For this Statistical Process Control procedures are utilized. SPC utilizes statistics to recognize varieties simultaneously with the goal that it tends to be controlled. Control graphs are utilized in SPC for estimating the variety all the while and that can be ceaselessly improved by the various methods utilized in the SPC, for example, 7 QC apparatuses. This paper shows relevance of the masurable procedure control strategies in various assembling enterprises.Right now different research articles and the contextual investigations on the execution of the Statistical Process Control Techniques in the assembling businesses are chosen for the review.

5G Technology

Arvind Sharma **Shafi Jasuja,**
Nisha Kumari **Kanu Gopal**
Chandigarh Engineering College, Landran, Mohali

Abstract

This paper focuses on the research challenges of mobile cloud computing and fifth generation wireless technology, which embraces the advantages of fifth generation mobile networks over the former generations to overcome some situations in Mobile Cloud Computing. We evaluate the major benefits offered to mobile cloud computing by the fifth-generation wireless networking technology, including the aspects of heterogeneous connectivity (HetNet), device-to-device (D2D) and machine-to-machine (M2M) communications, also energy efficiency. Our research concludes by revealing open challenges and attractive topics for further research in this area.

Web Augumented Reality (WebAR)

Ashima Kalra **Shalini**
Nitasha Singla **Kapil Mehta**
Chandigarh Engineering College, Landran (Punjab) Mohali

Abstract

The development of augmented reality (AR) is ascending excessively, Web-based augmented reality (WebAR) is an advent to users which stamp out the friction of downloading an application based on AR, by simply publishing the 2D/3D content in web browsers to be accessible by customised URL. optimization when a digital 2D/3D content is rendered in the user device's camera. Mobile augmented reality (Mobile AR) is gaining increasing attention from both academia and industry. Hardware-based Mobile AR and App- based Mobile AR are the two dominant platforms for Mobile AR applications. However, hardware-based Mobile AR implementation is known to be costly and lacks flexibility, while the App-based onerequires additional downloading and installation in advance and is inconvenient

Enhanced Data Management Framework for Cloud Based System

Ashpinder Kaur **Shalini Sharma**
Nitin Kumar Gohal **Karamvir Singh Rajpal**
Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

A novel approach for safe data storage has been presented as part of the research activity to address the challenges of data security on servers. The proposed technique saves data according to data type. Data is separated and encrypted into portions before being stored on servers using this approach. This approach has been subjected to a time analysis. Data storage on the server requires less time than the integrated solution. In addition, it has a higher throughput than the integrated technique .

Automatic Number Plate Detection System: A Panoramic View

Ashveen Kaur **Shalley Bakshi**
P N Hrisheekesha **Karuna**
Chandigarh Engineering College, Landran (Punjab) Mohali

Abstract

In recent years, the number of vehicles has been increasing enormously which has caused difficulties in detecting a vehicle as well as the person involved in any criminal activity or traffic violation. To work out this issue, an Automatic Number Plate Vehicle Detection System has been in use for quite some time now. This system is crucial to traffic control, criminal activities and surveillance applications. It is an automated system that consists of two major steps, first is to detect the number plate (unique identification plate) of the vehicle and second is to recognize the characters. This work contributes to evaluate the various techniques previously used in the automatic number plate vehicle detection system.

Techniques of Object Detection and Classification

Barjinder Singh **Pardeep Singh**
Kiran Devi
Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

Object recognition is classic technique used to effectively recognize an object in the image. Over the last decade, object analysis has caught the attention of researchers to explore and cover the aspects of object detection and recognition related problems in the technologies such as robotics, surveillance, agriculture, medical and arketing. In this paper, we provide a review of deep learning-based object detection frameworks. The review begins with a brief introduction on the history of deep learning and its representative tools, namely, the convolutional neural network, RCNN, Fast RCNN, Mask RCNN. Then, we focus on various techniques used for object detection and classification. The advantages and issues of various techniques are compared.

Prostate Segmentation Techniques in Different Imaging Modalities

Chandni **Sharnjeet Kaur**
Peerzada Manzoor **Kiran Hazra**
Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

Prostate cancer (PCa) is a leading dreadful cancer amid aged men in the United States. The U.S. is one of the most affected countries due to PCa. Apart from the developed countries, PCa has become the second leading cancer in major cities of India. In this paper, we have compared the various modalities and concluded that MRI is best for diagnosing PCa. Additionally, we have implemented existingtwo techniques and compared the state-of-the-art.

Authentication and Authorization of Wireless Network using Elliptic Curve Algorithm

Chetan Jain, **Shashi Bala**
Pradeep Gaur **Komal Arora**
Chandigarh Engineering College, Landran (Punjab) Mohali

Abstract

Wireless Mesh Network creates a mesh of nodes to relay information from one node to the destination. In this network, only one node needs to be physically connected with the internet device to cooperate with each other to transmit the data. However, the biggest challenge of relying on wireless mesh network is its limitation of getting connected with all the other nodes in the vicinity as the network does not pass through strict authentication process. These authentication schemes can be easily hacked by session hijacking or packet intercepting techniques or introducing malicious codes in the network. In this research paper, we try to resolve this problem in three steps:

1) Secure authentication of node joining on the basis of token value generated by trusted party server.
2) Compute belief factor in the trusted third party server on the basis of the previous transactions stored in the server between the senders and receivers.
3) Using elliptic curve algorithm, encryption scheme will be provided on the files to convert the plain text into cipher text in order to avoid decryption between networks.

Virtualization Level Security in Cloud Computing Environment

Chetnnya **Shikha Sharda**
Pravneet Kaur **Komal Dhiman**
Chandigarh Engineering College, Landran (Punjab) Mohali

Abstract

Cloud Computing has been envisioned as the next generation architecture of IT enterprise. It promises to provide a flexible IT architecture, accessible through internet for lightweight portable devices. This would allow many –fold increase in the capacity of the existing and the new software. Cloud Computing depends on the Virtualization for service implementation and distribute resources over web as web services. The major issue of Virtualization is the security which has been examined as an unproven commodity when user stipulates for cloud resources. This paper proposes a new security architecturewhich detects the guest to guest attack in the virtualization environment

Heuristics for Workflow Scheduling and Load Balancing In Cloud Environment

Chitender Kaur **Shilpi Budhirja**
Preeti Bansal **Konika**

Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

In cloud environment, optimal algorithms are needed to schedule workflow tasks while considering Quality of Service (QoS) parameters. A workflow scheduling and load balancing algorithm must ensure minimum resource wastage while allocating these distributed cloud resources and also avoiding overloading/ underloading of these resources in terms of Virtual machines (VMs). This paper presents the challenges faced by workflow management system and various heuristic techniques being for generating optimal schedules in cloud environment for workflow execution on VMs with balanced load. The performance metrics used for evaluation and optimization of these heuristic approaches used for scheduling and load balancing have also being discussed.

Time Based and Voice Based Messenger - An Android Application

Daljit Kaur **Shivani Sharma**
Preeti Mehta **Krishan Kant**

Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

The developed application is time and voice based. The phone automatically goes to the silent mode as soon as the application is opened and various mode options (Driving, In class etc) and voice recognition button is displayed to the user. The user can set manually the time or speak to set the desired mode with default time option of 2 hours. When the other person calls the user , the message is sent from the user phone to the caller that “I am busy and would call you after (y-x) hr)”, where(x is starting time limit and y is ending limit).

Impact of Cyber Risks from Internet of Things

Damanpreet Kaur **Shushil Garg**
Preetranjan Kaur **Kulbhushan Verma**
Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

This paper proposes visualization of IoT cyber risks in designing strategies of supply chain and business. It is seen that cyber risk are presented by Digital IoT technologies in a supply chain which companies. The literature review comprise of government and industry papers and comparison is done between supply chain models and business with studies conducting on new technologies of IoT. The design parameters for support system of decision for looking at the cyber risk in digital economy from supply chain of IoT. A case study on two companies of IoT was done for grounding design process. This study includes methods based on discourse analysis and categorical and open coding.

Software Security: An Important Part of SDLC

Dapinty Saini **Simarpreet Kaur**
Priyanka Kamboj **Kuldeep Sharma**
Chandigarh Engineering College, Landran (Punjab) Mohali

Abstract

This research emphasizes mainly on the need for software security. Soft wares are developing at a faster pace so it is required to impose security on them in order to secure them from cybercrimes. Softwares have been facing problems by the attackers who are constantly kept on breaching the Data. Therefore, this survey comprises the phases that are an integral part of the SDLC from the security point of views such as Design and testing phase. Moreover, it quests upon the data related to threats and attacks. Not only this, but it also involves the prerequisites that have to be determined before developing the software like, what are the approaches that should be followed and what are the best suitable designs to secure the software

Network Security in the Blockchain Challenges Field in Brute Force Attack and Networking Attack using Encryption Algorithm

Simranjit Kaur **Priyanka Kaushal**

Lakhvinder Kaur

Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

Agile methods in today's scenario have grabbed the attention of software engineers worldwide. The reasons are due to its iterative nature, frequent delivery of software, face to face communication, less need of lengthy documentation etc. Agile methods focus on accommodating change even late in the development lifecycle. One of the more important issues in the development of larger scale complex systems is accommodating changes to requirements. Someone proposed a framework which combines the principles of agile and conventional software development that solves the issue of rapidly changing requirements for larger scale systems. The framework consists of two parts. First one is a requirements gathering approach that reflects the agile philosophy i.e. the Agile Re-quirements Generation Model and second one is a tailored development process that can be applied to either small or larger scale system. Before validating the applicability of agile requirement generation model, there is a need of complete description of agile RGM to all users who want to implement this model in their projects. So this paper presents a complete description of agile RGM and all its phases with the help of UML.

QoS and Cost Aware Service Brokering using Pattern Based Service Selection in Cloud Computing

Divjyot Singh Puri **Sonali Gupta**
Priyanka Sood **Lakhvir Kaur**
Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

In this paper an effective Services selection mechanism has been introduced for creating a practically useful Service Broker. Selection of Services is based oncharacteristics such as performance, reliability and cost, ranking and integrity are also considered. In Cloud computing a service broker is responsible for routing the user requests to the most appropriate Services. Traditionally, user of a service issue service request with some specific characteristics to a service broker and the broker searches all available Services with specified service and with a certain level of the user satisfaction. But, how can we select a set of available services from a query of service user with some restriction? To solve this issue, we propose a service selector for service broker that can denote the restriction of similar services into a service test data, which is a set of similar cloud services, and select a set of services that provide a certain level of service consumer's satisfaction. We first identify the performance, reliability and cost of services which could be important for a cloud service consumer while requesting and then represent them in a knowledge base. And then we implement a Usage Pattern based selection mechanism to handle a service request with Limitation and the selection method is experimented on a simulated service test data.

A Study of Challenges in Big Data with its Security Use

Dushyant Kumar **Sonia Jindal**
Promila **Likhilpreet Kaur**
Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

Security and privacy concerns are growing as big data becomes more and more accessible. the gathering and aggregation of giant quantities of heterogeneous data are now possible. Large-scale data sharing is becoming routine among scientists, clinicians, businesses, governmental agencies, and citizens. However,the tools and technologies that are being developed to manage these massive data sets are often not designed to include adequate security or privacy measures, partially because we lack sufficient training and a fundamental understanding of the way to provide large-scale data security and privacy. We also lack adequate policies to make sure compliance with current approaches to security and privacy. Furthermore, existing technological approaches to security and privacy are increasingly being breached, whether accidentally or intentionally, thus necessitating the continual reassessment and updating of current approaches to stop data leakage.

A Novel Fuzzy-K Means based Support Vector Machine for Software Quality Prediction

Gagan Singla **Sonia Moudgil**
Rachna **Lofty Sahi**
Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

Size has been one of the most important factor in software which is increasing day by day, due to which we have seen an enormous amount of increase in complexity as well as in size of software. There has been a quick increase in efforts required in managing the quality of the software. How to preserve and guarantee software quality was always an important issue which was needed to be solved. Now a days there are different sorts of software quality prediction techniques existing which will help us to predict the software quality. Though, all these techniques lack a broad study to assess and relate numerous prediction methodologies so that quality professionals may select a suitable predictor. The key objective of this paper is learn about the diverse techniques which performs best and are an undesirable problem since behaviour of a predictor also depends on numerous other specific factors like ambiguity in the availability of data, nature of dataset, problem dominion etc. I have tried to showsome of the several software quality prediction techniques in terms of various evaluation metrics.

Resource Provisioning for IoT Application in Fog Computing

Gaganpreet Kaur **Sumeet Goyal**
Rachna Manchanda **Mahak**
Chandigarh Engineering College, Landran (Punjab) Mohali

Abstract

Fog computing (FC) is a new computing paradigm that considers an extension f cloud computing. In this computing, solutions are provided to the users for processing delays. Resource provisioning in fog computing is a critical task that becomes more tedious due to the unavailability of the required resources to respond. Research on resource provisioning in FC is still in its inception. In this style of computing, resource provisioning is based on energy. This paper presents different scheduling techniques. This framework introduces a resource provision policy for flexible allocation of resources to applications. The policy has been demonstrated through iFogsim. The experimental results represent thefeasibility and effectiveness of the resource provisioning in fog.

A Review on Biometric System

Gaurav Garg **Suraj Chauhan**
Rahul Kakkar **Malvika Kaushik**
Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

An extensive diversity of systems necessitates trustworthy personal recognition schemes to either authenticate or resolve the individuality of an individual requesting their services. Now a day the Biometric is grow to be the most admired technique due to its millstone. Because of need of high security systems we are also using the biometrics broadly. Another feature of biometric is its efficiency. It is very easy to use and handle. In this paper the review of Biometric System is provided. This paper also described the basic concepts of biometrics.

Implementation of Clustering Strategy for Heterogeneous and Dynamic Data in IoT

Gaurav Saini **Tanu Minhas**
Rajdeep Kaur **Mamta**
Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

Internet of Things (IoT) is a system of devices or physical gadgets which are organized through wireless (802.11, 802.11g, 802.16, Bluetooth) or wired LAN. IoT is a revolutionary vision pertaining to the fact that everything could be connected to the Internet. With the increase in number of Internet users, IoT clients are also increasing. In present day, the IoT clients are 7.5 billion and by 2020, these numbers will reach up to 30 billion expanding the measure of IoT data. Data generated by these huge numbers of devices is enormous and becomes troublesome to handle it for efficient storage and analysis. So, we need an efficient approach to manage multi-dimensional IoT data. IoT data may of great business significance to many users. But, useful information from such a gigantic IoT data can only be extracted by some appropriate data mining algorithms byextraction and transformation into an understandable form. To generate such relevant information, majorly clustering techniques are employed in data mining. Clustering basically helps in aggregation and organization of data in a structuredform. Hence, in proposed work, we focus on developing various clustering methods pertaining to IoT data collected in different scenarios such as smart homes, intelligent traffic, smart weather information system etc. Data streams in different scenarios have different type and patterns for which no single clusteringtechnique is optimal. Thus, IoT data streams are analyzed and accordingly appropriate clustering technique is applied. Conceivable result of this proposed approach is: Guidelines that helps in deciding suitable clustering scheme for the given IoT data set which results in optimal performance.

Security Threats & Provocation in Internet of Things

Gaurav Mehta **Tanveer Kaur**
Rakhi Sharma **Mandeep Kaur**
Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

The Internet of Things (IoT) opens open doors for wearable gadgets, home apparatuses, and programming to share and impart data on the Internet. Given that the common information contains a lot of private data, saving data security on the common information is an significant issue that can't be ignored. In this paper, we start with general data security foundation of IoT what's more, proceed with data security related difficulties that IoT will experienced. At long last, we will likewise call attention to examine headings that could be the future work for the answers for the security challenges that IoT experiences.

Agile RGM-use Case Methodology

Gurinderjit Kaur **Tanvi**
Raman Arora **Maneet Kaur**
Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

Agile methods in today's scenario have grabbed the attention of software engineers worldwide. The reasons are due to its iterative nature, frequent delivery of software, face to face communication, less need of lengthy documentation etc. Agile methods focus on accommodating change even late in the development lifecycle. One of the more important issues in the development of larger scale complex systems is accommodating changes to requirements. Someone proposed a framework which combines the principles of agile and conventional software development that solves the issue of rapidly changing requirements for larger scale systems. The framework consists of two parts. First one is a requirements gathering approach that reflects the agile philosophy i.e. the Agile Requirements Generation Model and second one is a tailored development process that can be applied to either small or larger scale system. Before validating the applicability of agile requirement generation model, there is a need of complete description of agile RGM to all users who want to implement this model in their projects. So this paper presents a complete description of agile RGM and all its phases with the help of UML.

QoS based Fog Computing methodology

Gurleen Kaur Sandhu **Tarun Singhal**
Ranjeet Singh **Manjeet Kaur**
Chandigarh Engineering College, Landran (Punjab) Mohali

Abstract

Cloud computing methodology is a traditional and well-established computing terminology. This model is a full functional and developed model which allows users to obtain on-demand services and pay as per usage facilities. In the beginning, cloud computing has empowered as on demand and ubiquitous model for all computing resources. As the new trend of Internet of Things (IoT) is growing in various private and industrial spaces, it requires changes in the existing approach. The cloud computing paradigm may not be a viable choice to fulfill the requirements of the highly distributed IoT based applications due to the issue of latency. In this paper, a discussion of a three-layer architecture of fog computing and role of different QoS parameters is discussed for each layer of fog computing. A comparison chart is represented for different scheduling techniques.

Design and Implement Quality of Service (Qos) Based Techniques on Multicast Mesh Networks

Gurmandeep Kaur **Tripti Aggarwal**
Rashmi **Manjyot Kaur**
Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

Quality of Service (QoS) can be designed into the network to guarantee that certain traffic types, such as voice and video, are prioritized over traffic that is not as time-sensitive, such as email and web browsing. In this paper, we are using multicast networks to implement certain type of traffic which has to be chosen on the basis of priority. Different types of traffic place different demands on the network. Video traffic and voice traffic require greater resources from the network. They require more bandwidth to achieve the type of quality that is needed in a phone call or streaming video. When the volume of traffic is greater than what can be transported across the network, devices queue, or hold, the packets in memory until resources become available to transmit them. Queuing packets causes delay because new packets cannot be transmitted until previous packets have been processed. If the number of packets to be queued continues to increase, the memory within the device fills up and packets are dropped. Without any QoS mechanisms in place, packets are processed in the order in which they are received. When congestion occurs, network devices such as routers and switches can drop packets. This means that time-sensitive packets, such as real-time video and voice, will be dropped with the same frequency as data that is not time-sensitive, such as email and web browsing. Voice traffic requires at least 30 kilobits per second of bandwidth but video traffic is more demanding. The size of the packets that it sends across the network are more bursty and greedy. It consumes a lot more resources. It's also sensitive to drops and sensitive to delay. It requires no more than .1 to 1% loss of packets and requires at least 384 kilobits per second in bandwidth. Where specific classes of traffic can be configured by the administrator and used to prioritize different types of traffic. In order to guarantee that voice traffic is prioritized to the point that there's no drop offs. If the queue has gone over the maximum threshold, then packets are automatically dropped.

Agile RGM-Use Case Methodology

Gurmeen Kaur **Tulika Mehta**
Rashmi Karkra **Mankiran Kaur**
Chandigarh Engineering College, Landran (Punjab) Mohali

Abstract

Agile methods in today's scenario have grabbed the attention of software engineers worldwide. The reasons are due to its iterative nature, frequent delivery of software, face to face communication, less need of lengthy documentation etc. Agile methods focus on accommodating change even late in the development lifecycle. One of the more important issues in the development of larger scale complex systems is accommodating changes to requirements. Someone proposed a framework which combines the principles of agile and conventional software development that solves the issue of rapidly changing requirements for larger scale systems. The framework consists of two parts. First one is a requirements gathering approach that reflects the agile philosophy i.e. the Agile Re-quirements Generation Model and second one is a tailored development process that can be applied to either small or larger scale system. Before validating the applicability of agile requirement generation model, there is a need of complete description of agile RGM to all users who want to implement this model in their projects. So this paper presents a complete description of agile RGM and all its phases with the help of UML.

Latest Implemented Optimized Load Balancing Technique Over the Cloud Environment

Gurmeet Kaur **Twinkle**
Ravdeep Kaur **Manmeet Kaur**
Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

Cloud Computing is a term that describes a wide range of facilities and features. Along with other important and new developments in the field of technology, cloud has emerged as a very beneficial technology for the users because of the endless advantages that are provided by it. Cloud computing has grown into a vast and complex ecosystem of technologies, products, and services. With increase in consumers day by day, the load on the servers have been also increasing manifold.

An Approach on an Autonomous Grading System using Adaptive Booster Gradient Technique

Gurpreet Kaur **Upinderpal Singh**
Reecha Sood **Manpreet Kaur Kaler**
Chandigarh Engineering College, Landran (Punjab) Mohali

Abstract

Due to the rapid up-gradation in the technology, there is a voluminous diversification in computation, size and framework of interconnected devices made a requirement of an autonomous computing system. The purpose of managing such uprising problems without the intervention of humans can be achieved with the usage of autonomic computing. In this paper the adaptive boosting technique is applied on the grading system to get the desired and applied specifications. It is done after applying the infinite restricted Boltzmannmachine using adaptive boosting technique to achieve the grades. The performance measures used are recall, precision and accuracy.

Closure Properties of General Jumping Finite Automata

Harjinder Singh **Varun Gandhi**
Renu Puri **Meenakshi**
Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

The present paper suggests a new disquisition space in automata proposition – Jumping Finite Automata. This automata functions unlike traditional finite automata because they recite input words discontinuously — that is, afterward examining a symbol, they can go to some symbols within the string and carry on their calculation from there. The paper founds numerous results regarding jumping finite automata in relations of generally delved regions of automata proposition, similar as closure properties. Some of these properties of General Jumping Finite Automata (Kleene star (K)* and Kleene plus (K)+) and mirrorimage which are not yet defined are also debated here.

Provide Society Easier Cloud based E-Health System

Harjot Kaur **Vikas Sharma**
Ricky Devi **Mohit**
Chandigarh Engineering College, landran (Punjab) Mohali

Abstract

Today 'date, globalization and online system are must. But still when we feel sick and we move to the hospital then we have to give complete details of our medical history every time to each doctor and also explained what kind of medicine we are taking. Secondly, if we have very minor problems, still we have to stay in queues for long time. To solve these both problems, we are providing hardware and cloud solution. Cloud will be helpful for storage of medical history of each patient and hardware will be used for two purposes –one is to detect patient id and secondly to provide voice assistant solution for his basic problem based on machine learning solution. We can also add infrared based temperature measuring solution in this h/w device. This solution will also helpful in research and legal problems of doctors.

Error Correction in OCR Using Algorithms

Harpreet Kaur **Vinay Bhatia**
Ripple Sahni **Monika Sharma**
Chandigarh Engineering College, Landran (Punjab) Mohali

Abstract

Post-Processing is the last activity to occur in a series of OCR processing stages. The goal of Post- Processing is to detect and correct linguistic misspellings in the OCR output text after the input image has been scanned and completely processed. Fundamentally, there are two types of OCR errors: non-word errors and real-word errors. A non-word error is a word that is recognized by the OCR system. In contrast, a real-word error is a word that is recognized by the OCR system. A better approach, could be automating the correction of misspelled words using computer software such as spell checkers. A number of techniques are available for detection and correction of errors in recognition of OCR systems, each with its own priorities and weakness. We tried to explore the techniques in order to get good results for recognition rates i.e. Red Black Tree Implementation, Symmetric delete spelling correction Method, Union of both and Ranking method.

Comprehensive Study of SHA and Block Chain Use Cases

Harshmeet Kaur **Zeba Nelofar**
Rita Saini **Namarta Thakur**
Chandigarh Engineering College, Landran (Punjab) Mohali

Abstract

A blockchain is a distributed, decentralized database of records that allows for rapid, secure transactions without the need for centralized control. It is a method of storing data in such a way that it is difficult or impossible to alter, hack, or cheat it. Blockchain is a type of Distributive Ledger Technology (DLT) in which transactions is recorded with an immutable cryptographic signature called Hash.

About Chandigarh Group of Colleges

"Building Careers, Transforming Lives"

The heritage campus, Chandigarh Group of Colleges Landran, stretching back to a decade and half is superlative in giving professional education to the students from all corners of the country. The group commenced its journey in the year 2001 with strength of only 100 students and with two programmes. Today, the campus has more than 15000 students across 15 programmes. CGC is committed to maintain the numero Uno position in placements in the north Indian region and ensuring that every CGCian gets the best possible placement opportunities and multiple job offers in hand with hefty pay packages.

About Chandigarh Engineering College

Chandigarh Engineering College (CEC), Landran achieved a milestone by being the only private engineering college to have been accredited by the National Board of Accreditation (NBA) for 5 years. It is now among the top 25 private colleges and top 50 accredited institutes of the country in terms of quality education, research and other state-of-the-art facilities. The college has more than 250 well qualified faculty members looking after the operations, research and teaching in the institution. CGC bagged Rs 4 crore grant from World Bank for raising its academic standards through National Project Implementation Unit (NPIU), New Delhi. CEC has more than 1100 computers in their FCPIT, Communication and Computer Graphics laboratories. The institution feels proud of the students who are already working with acclaimed companies like Microsoft, Infosys, TCS,WIPRO, L & T, Samsung, Capgemini, Tech Mahindra, Cognizant to name a few.The institution has gone miles in establishing a name in the field of technical education.

Bharti Publications, New Delhi
Email-info@bartipublications.com | bhartipublication@gmail.com
www.bhartipublications.com

ISBN 978-81-19079-20-9

E-book reader