ConCIPT 2020

National Conference on Computational Intelligence, Practices and Technologies

9th to 11th January 2020

ABSTRACTS

DEPARTMENT OF COMPUTER SCIENCE

Farook College (Autonomous)

Conference on Computational Intelligence, Practices and Technologies (ConCIPT 2020)

Abstracts

Preface

Conference on Computational Intelligence, Practices and Technologies (ConCIPT-2020) is a RUSA sponsored national level conference organized by the Postgraduate and Research Department of Computer Science, Farook College(Autonomous), Kozhikode. The ConCIPT-2020 aims to bring together leading academicians, scientists, researchers and research scholars from different parts of the country to share and exchange their research experiences and contributions on all aspects of Computational Intelligence. It also provides a premier interdisciplinary forum for researchers, practitioners and educators to present and discuss the most recent innovations, trends, concerns, practical challenges encountered and the solutions adopted in the field of Computational Intelligence and related areas.

We are pleased to bring out this 'Book of Abstract' as an outcome of ConCIPT-2020 held during 9 - 11, January 2020 and consists all the abstracts of the authors who contributed to the Conference.

We are highly indebted the Principal, Management Committee, Faculty members of the Farook College (Autonomous) and RUSA, Govt. of India, for their support and contributions for the success of the Conference.

Dr. Kabeer V.
Organizing Secretary

Sameer V.V.
Co-ordinator

Farook College
Date: 09/01/2020

Contents

1. Intelligent Information Systems

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Abstract. Learning should lead to the creation of smart information system. While a good information system should be able to respond to several queries,the system would be smart if the responses are generated intelligently.

In this talk we explore how an intelligent information system could be conceived keeping the objective of automation of mass examination system, which is of current relevance in Indian education scenario. Also take a look at several other related research issues.

2. The Role of Computers in Medical Diagnostic Systems

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Abstract. The path breaking innovations that happened during the current decade are driven by developments in VLSI and computing technologies. One of the fields that benefited immensely is the medical diagnostic systems We study the role of computers in development of the scanning systems such as X-ray CT, magnetic Resonance imaging (MRI), positron emission tomography (PET) and diffused optical tomography (DOT).

X-ray CT was a major step in medical diagnosis. It opened up a new world of hidden details to a doctor thereby improving a doctor's skills. In a case of a disease like cancer, frequent scanning will help the doctor to understand the severity of the illness. However, the frequent exposure of X-rays to a human body is harmful. The X-ray CT was followed by the development of MRI and PET systems. But, these imaging systems also have a few drawbacks. The diffused optical imaging, the new technology that is being developed currently is based on near infrared light instead of X-rays.

The diffused optical system is cost effective, and is not harmful as X-ray CT or PET systems. However, the computation requirements are much higher.

3. Computational Intelligence Systems

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Abstract. All real life problems when digitized have uncertainty or vagueness or ambiguity in one form or other. Fuzzy logic, one of the component of computational intelligence, helps us to represent and handle these in a better way. Learning from known examples is must for all most all systems for getting its optimal predictions. Neural network, one of the component of computational intelligence, helps us to learn from the known examples even in the presence of uncertainty or vagueness or ambiguity. A designed system will need to be optimized for better performance, for this Genetic/Evolutionary algorithm, another major component of computational intelligence, helps us. This talk concentrates on the need, necessity and usage of computational intelligence system.

4. Detection of Deblurring using Multi-derivative Gray level co-occurrence Matrix

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Abstract. This paper encapsulates the detection of deblurring in an image. We have used MGLCM (Multi-derivative Gray level Co- occurrence matrix) for feature extraction and SVM (Support Vector Machines) classifier for identifying the presence of deblurring artifacts. MGLCM is calculated from the first and second-order derivative of images. A classical sliding window strategy is used. For each sliding window, we extract the MGLCM features and use the SVM classifier. Four parameters, Contrast, Correlation, energy, and Homogeneity is used as classification parameters for Support vector machine (SVM) classifier. As the paper uses 6 different image sizes we obtain 6 accuracies in which 4x4 image size has shown the highest accuracy that is 99.38. This approach would help to extract useful features and help for deblurred image detection.

5. Client-Server Applications for Mobile Devices - State of the Art

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Abstract. The client-server is a legacy time tested model that has outlived major revolutions in different areas of computer science. Tremendous growth and adaption of mobile devices, design and development of client server applications suited for wireless mobile devices demands attention of researchers and developers alike. This paper discusses about challenges of developing client server applications in the mobile devices. It also discusses about the approaches for developing client server applications and choosing the right database as the backend.

6. Automatic Identification of Blurred Images in UAV Image Sets Based on Human Perception

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Abstract. Unmannered Aerial Vehicles(UAV) are used for capturing images of desired areas. These images will have high ground resolution and good spectral and radio metrical resolution, due to the low flight altitudes combined with a high resolution camera. And this technique is cost effective too. This UAV datasets can be used for object tracking, change detection in small scale areas etc. But main problem is that there are chances of occurrence of blur due to camera movement or wind. The detection and removal of these images is currently achieved manually. This proposed system is used for detecting blurred images automatically. Humans pointing out blurred images by comparing it with other images. In this method also, we are using this human perception. Here we are creating an internally comparable image and calculating SIEDS (Saturation image edge difference standard-deviation) value between original and comparable image. This SIEDS value will also give the quality of dataset. This method is fast and reliable for different UAV datasets than previous methods

7. Evaluation of Clustering Routing Protocols in Vehicular Ad Hoc Networks(VANETs)

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Abstract. A vehicular ad hoc network (VANET) is a mobile ad hoc network (MANET) wherein network nodes are vehicles – maximum typically road vehicles. VANETs present a completely unique variety of challenges and opportunities for routing protocols due to the semi-organized nature of vehicular movement's situation to the constraints of street geometry and guidelines, and the boundaries which restrict the physical connectivity in city environments. In specific, the issues of routing protocol reliability and scalability across huge urban VANETs are presently the situation of intense studies. Clustering can be used to enhance routing scalability and reliability in VANETs, because the consequences inside the disbursed formation of hierarchical network systems by means of grouping vehicles together based on correlated spatial distribution and relative speed. In addition to the advantages to routing, these corporations can serve as the foundation for congestion detection, information dissemination and leisure packages. This work explores the layout made within the development of clustering algorithms targeted at VANETs. It offers taxonomy of the strategies applied to clear up the issues of cluster head election, cluster association and cluster control, and identifies new directions and current trends inside the design of those algorithms. Additionally, methodologies for validating clustering overall performance are reviewed, and

a key shortcoming – the shortage of practical vehicular channel modelling – is recognized. The importance of a rigorous and standardized overall performance evaluation regime making use of realistic vehicular channel models are verified.

8. Online Payment System Using Steganography and Visual Cryptography

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Abstract. This paper presents a new approach for providing limited information only that is necessary for fund transfer during online shopping thereby safeguarding customer data and increasing customer confidence and preventing identity theft. A cryptographic technique based on visual secret sharing used for image encryption. Using k out of n (k, n) visual secret sharing scheme a secret image is encrypted in shares which are meaningless images that can be transmitted or distributed over an untrusted communication channel. Only combining the k shares or more give the original secret image. Phishing is an attempt by an individual or a group to thieve personal confidential information such as passwords, credit card information etc from unsuspecting victims for identity theft, financial gain and other fraudulent activities The use of images is explored to preserve the privacy of image captcha by decomposing the original image captcha into two shares that are stored in separate database servers such that the original image captcha can be revealed only when both are simultaneously available; the individual sheet images do not reveal the identity of the original image captcha. Once the original image captcha is revealed to the user it can be used as the password. Several solutions have been proposed to tackle phishing.

9. Reinforcement Learning - An Effective Methodology for Hard Control Problems

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Abstract. Artificial intelligence, machine learning, deep neural networks are some terms that can spark ones imagination of a future where robots are thinking and evolving creatures. In this context, it is very much useful to look at reinforcement learning, or RL. It's a type of machine learning that has the potential to solve some really hard control problems. This paper describes various machine learning approaches in general and reinforcement learning approach in particular. Also, various potential applications of reinforcement learning in the context of control system and robotics. The paper also explains some potential the benefits and limitations of reinforcement learning compared to a traditional control system approach. Another objective of this paper is to bring an affinity towards Reinforcement Learning to the classical machine learning research scholars.

10. Automatic Intrusion Monitoring and Prevention System

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Abstract. Object tracking has been used nowadays in many applications. These objects can be compared with the similar objects in Database. Object identification and comparison can be done by combining the Content Based Image Retrieval technique. The Combined system can be used in order to identify an unauthorized access to the system. The manual premise monitoring system is not capable of tracking and preventing intrusions completely. But the electronic system is totally reusable from all angles. The Automatic system can't be influenced by natural instincts of emotions.

11. Vocal Tract Length and Formant Frequency Analysis for Forensic Speech Applications

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Abstract. Vocal tract length of the speaker is an important attribute in Forensic speaker recognition. In this work Formant frequency analysis of Malayalam vowels were carried out on sound samples collected from 20 speakers and their vocal tract lengths were found out experimentally. We found that second and third formants are highly influencing the vocal tract length. This information is highly useful for forensic speaker recognition problem.

12. A Fast and Secure Image De-duplication scheme over Encrypted Big-data Storage in Cloud

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Abstract. Cloud Distributed storage is getting famous increasingly more as it is ease and on request utilization of enormous stockpiling. Cloud storage space is huge; this kind of duplication wastes networking resources and more and more complicates data management. One of the biggest problems in cloud computing Image duplication which mean same image may be present multiply time in cloud storage. Image de duplication prevents duplicate copies of the data from being stored. Imaged duplication helps to use the cloud storage in a more efficient manner and also improves the bandwidth and storage space. Research in data de duplication detection on cloud storage has increasingly since 2018, but there is no research studies developed towards image de duplication. The main aim of the proposed approach performs Image De-duplication scheme over the Encrypted Big-data Storage in Cloud. The proposed new well-organized E-SURF (Extended-Speeded Up Robust Features) model this identifies unique set of features which can effectively match the image. This algorithm has found out to be one of the most robust feature detection techniques. The experiments of the proposed techniques are carried out with real time data set and the results are generated to prove the efficiency of the proposed system. The result shows the proposed work outperforms than the existing approaches and improves the detection accuracy.

13. A comparative study of popular blockchain consensus methods

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Abstract. Blockchain and Distributed Ledger Technology (DLT) is getting huge attention after Bitcoin, Ethereum, Hyperledger etc are successfully demonstrated its capability. Blockchains are rapidly moving from building financial services to corporate level applications and started demonstrating its capabilities and limitations of the existing systems. Consensus algorithms are the integral part of blockchains, which is playing an important role in selecting blocks and attaching it as next block to the data structure. As we know, most of the blockchain architectures are not relying on a 'trusted third party' for transactions to achieve censorship resistance, and to avoid centre point of failure So it needs an automated system to verify and accept/reject blocks to the blockchain database. There are dozens of consensus methods developed and using in different blockchains according to the purpose and use cases of the blockchain system. Here, we are comparing popular consensus methods, its merits and demerits. We are discussing most popular consensus methods like Proof of Work, Proof of Stake, Delegated Proof of Stake, Proof of Space, Proof of History etc.

14. A review of mammography views used in automatic detection of breast cancer

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Abstract. Breast cancer is considered as the second most common type of cancer in the world. It is prominent for presenting the highest mortality rate in addition to one of the smallest survival rates after diagnosis. An early diagnosis means a substantial increase in the survival rate. Number of computer-aided detection systems have been developed and used to assist health experts and to indicate suspect areas that would be difficult to perceive by the human eye; this approach has helped in the automation of preprocessing phase of the analysis process. The type of mammogram films views opted for the computer-aided detection system plays an important role in the performance of the detection system. This paper presents a study report of the different mammographic image views available for the computer-aided detection and diagnosis systems.

15. Sepsis Prediction using medical laboratory data analysis

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Abstract. Sepsis is a medical emergency condition that affects the immune response towards infections. It damages the ability of the body to fight against infections. The infection develops systemic signs of inflammation or organ dysfunction to the patient. This may leads to tissue damage, organ failure or even death. It is a significant health problem with a global estimated incidence of 148 per 100,000 person-year with an overall mortality of 26

Sepsis can go to a more serious and life threatening level called Septic stroke. Septic stroke is a subset of sepsis and leads to circulatory, cellular, and metabolic abnormalities. Septic stroke has higher mortality rate when compared to sepsis.

Early prediction of sepsis and septic stroke may reduce the mortality rate. But the pathogenesis of sepsis and septic shock are not completely understood. The symptoms exhibited by the infected also differs patient to patient. Due to this heterogeneous nature and resemblances to other disorders like cardiac dysfunction, may often leads to confusions and negligence.

This paper is an attempt to propose a model and isolate the sepsis and septic stroke patients by analysing the medical laboratory data.

16. Dataflow Paradigm: The State of Practice in Big Data Computing

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Abstract. With the emergence of data intensive technologies, the ratio of data volume is increasing at an exponential rate and big data applications are emerging in each and every fields like geophysics, financial engineering, medicine and pharmacy, biology, aviation, social engineering etc. There arises the most critical question of how these data is get processed. The solution is to shift the computing from control flow to data flow paradigm, as with big data problems, it is reasonable to concentrate on data than on the process. This paper is an effort to compare the dataflow with control flow paradigm and finding out the strengths of dataflow paradigm in big data computing. This paper is an attempt to propose a model and isolate the sepsis and septic stroke patients by analysing the medical laboratory data.

17. Fractional calculus and some of its applications in real world problems

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Abstract. Fractional calculus is an important branch of applied mathematics that deals with derivatives and integrals of arbitrary orders (including complex orders), and their applications in science, engineering, mathematics, economics, and other fields. Fractional calculus is an emerging field where many models are yet to be introduced, examined and implemented to real-world applications in many areas of science and engineering where non-locality plays a critical role. Recently, many theories and results are presented in this field, still, there are huge amounts of non-local phenomena unexplored and anticipating to be found. The goal of this chapter is to present the different fractional order derivatives concepts and definitions that are commonly used in the literature and to discuss the latest mathematical and conceptual developments in the field of fractional calculus and explore the scope for applications in diverse field of science and engineering.

18. A survey on the high performance computational platforms used in medical signal processing

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Abstract. Computer support to diagnosis mechanisms and prediction mechanisms for diseases have increased tremendously in the past decade or so. With the advent of technology, both in the software and hardware areas, the signal processing techniques for such systems have improved the treatment methodologies and early detection of life threatening diseases. The inclusion of high performance computing systems have a key role in such systems. This is perhaps because of the multidimensional data involved in medical systems which usually have a highly unstructured style also. The data involved is normally bulk in nature also. The survey conducted, attempts to understand the influence of a high performance computing model in certain medical systems.

19. Speech Analysis and Modeling for Malayalam Isolated Word Recognition using MFCC and Delta-MFCC

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Abstract. Speech Recognition occupies a prominent place in communication between the humans and machine. The speech enabled human machine interaction makes easy communication in one's native language, especially in a multi-lingual country such as India, where a large majority of the people will not be comfortable with communicating in English. A model is developed to recognize Malayalam isolated word using acoustic features such as Mel Frequency Cepstral Coefficents (MFCCs) and delta-MFCCs. A standard dataset developed by Central Institute of Indian Languages (CIIL) under the scheme Linguistic Data Consortium for Indian Languages (LDC-IL) is used for experimentation. MFCC and delta-MFCCs features of isolated words are computed and recognition experiments are conducted using feedforward neural network. This work is first of such kind using a standard database in Malayalam.

20. Survey of Neighbour-Knowledge Based Broadcasting Optimizations in Multi-Hop Wireless Networks

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Abstract. Development of highly efficient routing protocols for data dissemination is a challenging task in multi-hop networks. Broadcasting is the backbone of the route discovery process in any wireless multi-hop routing protocol. It is defined as the simultaneous transmission of the same message to multiple recipients. In order to make the routing protocols efficient, a lot of improvements have been made on the broadcasting techniques used in it. The main categories of improvements are probability based, area based and neighbor-knowledge based. This paper presents a survey and comparison of various neighbor-knowledge based broadcasting improvements in wireless multi-hop routing protocols. The main contributions of this survey include: 1) classifying the neighbor-knowledge based broadcasting improvements reviewed in this paper into three main categories- Energy aware broadcasting, QoS aware broadcasting and Security aware broadcasting; 2) surveying and comparing the selected broadcasting improvements from the perspective of its design; and 3) discussing open issues and future possible design directions of neighbor-knowledge based broadcasting improvements.

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