

Guest Editorial Preface

Special Issue on Emerging Technologies in Computer Science: Part I

Ahmad Taher Azar, Faculty of Computers and Artificial Intelligence, Benha University, Benha, Egypt & College of Engineering, Prince Sultan University, Riyadh, Kingdom of Saudi Arabia

Computer science spreads a range of topics from theoretical studies of algorithms and the limits of computation to the practical issues of implementing computing systems in hardware and software. There is considerable and growing interest in the emergence of novel technologies in computer science applications. Emerging technologies in computer science include a variety of technologies such as computational intelligence, information technology, bioinformatics, biotechnology, cognitive science, robotics, and artificial intelligence.

This special issue will provide an opportunity for readers to engage with a selection of refereed papers that will be presented during the second International Conference of Computing and Informatics 2019 (ICCI-2019) which will be held at Benha University, Egypt, April 16-17, 2019, in addition to other regular submitted papers related to the themes of the special issue. The conference will provide an excellent forum which contributes new results in all areas of computer science, Information Technology and computer systems. The conference focuses on all technical and practical aspects of computing and informatics with applications in real-world and scientific problems. The goal of this conference is to bring together researchers and practitioners from academia and industry to focus on computing, information technology, computer engineering and establishing new collaborations in these areas. ICCI-2019 seeks to promote research that carries a strong conceptual message (e.g., introducing a new concept or model, opening a new line of inquiry within traditional or interdisciplinary areas, or introducing new techniques or new applications of known techniques).

The contents of the selected sixth articles are described briefly as follows.

The first paper titled “Identification of Telecom Volatile Customers using A Particle Swarm Optimized K-Means Clustering on their Personality Traits Analysis” by Elfergany A and Adl A. proposes the telecom customers personality traits (Extraversion, Agreeableness, and Neuroticism) to identify the volatile customers that always use the Negative word of mouth (NWOM) in communication with others. Hence, a combination of text analysis and personality analysis tool has been used to determine the customers personality factors from their chatting textual data, A particle swarm optimized k-means was used in the clustering process. The results provide an overview on how a chatbot conversation text represent the customer behavior. Optimizing k-means cluster using partial swarm achieve higher accuracy than using the traditional clustering technique.

The second paper titled “A new intra fine-tuning method between histopathological datasets in deep learning” by Dif N and Elberrichi Z. presents a new fine-tuning framework for histopathological images analysis. Despite the most common solutions where the ImageNet models are reused for

image classification, this research sets out to perform an intra-domain fine tuning between the trained models on the histopathological images. The purpose is to take advantage of the hypothesis on the efficiency of transfer learning between non-distant datasets and to examine for the first time these suggestions on the histopathological images. We used the Inception-v3 convolutional neural network architecture, six histopathological source datasets, and four target sets as base modules. The obtained results reveal the importance of the pre-trained histopathological models compared to the ImageNet model. In particular, the ICIAR 2018-A presented a high-quality source model for the various target tasks due to its capacity in generalization. Finally, the comparative study with the other literature results shows that the proposed method achieved the best results on both CRC (95.28%) and KIMIA-PATH (98.18%) datasets.

The third paper titled “Deep Learning in Plant Diseases Detection for Agricultural Crops A Survey” by Loey M. and ElSawy A. presents a survey about deep learning in plant diseases detection in terms of the dataset used, models employed, and overall performance achieved. Deep learning is the latest technology that brought a huge improvement in the area of machine learning in general and most particular in computer vision. The advances of deep learning have been applied to various domains leading to tremendous achievements in the areas of machine learning and computer vision. Only the most recent work has introduced applying deep learning to the field of using computers in agriculture. The need for food production and food plant is of utmost importance for the human society to meet the growing demands of increased population. Automatic plant diseases detection using plant images was originally tackled using machine learning and image processing approaches leading to limited results and limited scope. Using deep learning in plant diseases detection made it possible to produce higher prediction accuracies as well as broad the scope of detected diseases and plant specie

The fourth paper titled “Bio-CAPTCHA Voice-Based Authentication Technique for Better Security and Usability in Cloud Computing” by Hedaia et al. proposes a non-traditional authentication technique that we called Bio-CAPTCHA. The proposed technique uses a random voice-based password challenge that dynamically changes every time the user tries to login, which promises to significantly decrease the possibility of unauthorized access. The conducted Experimental and theoretical analysis confirms the high-security level of the proposed technique

The fifth paper titled “: Distributed Approach to Process Satellite Image Edge Detection on Hadoop Using Artificial Bee Colony” by Sharma et al. aims to proposes a MapReduce (MR) approach to perform edge detection of satellite images using nature-inspired algorithm Artificial Bee Colony (ABC). Edge detection is one of the significant steps in the field of image processing and is being used for object detection in the image. The paper also compares two edge detection approaches on Hadoop with respect to scalability parameters such as scaleup and speedup. The experiment makes use of Amazon AWS Elastic MapReduce cluster to run MR jobs. It focuses on traditional edge detection algorithm Canny Edge (CE) and the proposed MR based Artificial Bee Colony approach. It observes that for five images, the scaleup value of CE is 1.1 whereas, for MR-ABC, it is 1.2. Similarly, speedup values come out to be 1.02 and 1.04 respectively. The algorithm proposed by authors in this paper scales comparatively better when compared to Canny Edge. Article 6: Developing the Assessment Questions Automatically to Determine the Cognitive Level of the E-Learner Using NLP Techniques.

The last paper titled “Developing the Assessment Questions Automatically to Determine the Cognitive Level of the E-Learner Using NLP Techniques” by Deena et al. proposes a system which automatically generates two different types of question helps to identify the skill level of a learner. The key objective of the Teaching-Learning Process (TLP) is to impart the knowledge to the learner. In the digital world, the computer-based system emphasis teaching through online mode known as E-Learning. The expertise level of the learner in learned subjects can be measured through E-Assessment in which the Multiple-Choice Questions (MCQ) is considered to be an effective one. The assessment questions play the vital role which decides the ability level of a learner. In manual preparation, covering all the topics is difficult and time consumable. First, the MCQ questions with the distractor set are created using Named Entity Recognizer (NER). Further, based on blooms

taxonomy the Subjective questions are generated using Natural Language Processing (NLP). The objective of the proposed system is to generate the questions dynamically which helps to reduce the occupation of memory concept.

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Ahmad Taher Azar
Guest Editor
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Ahmad Azar has received a M.Sc. degree in 2006 and a PhD degree in 2009 from the Faculty of Engineering, Cairo University, Egypt. In 2014, he got a post- doctoral fellowship in the USA. He is a research associate Professor at the college of Engineering, Prince Sultan University, Riyadh, Kingdom Saudi Arabia. He is also an associate professor at the Faculty of Computers and Artificial intelligence, Benha University, Egypt. Prof. Azar is the Editor in Chief of International Journal of System Dynamics Applications (IJSDA) published by IGI Global, USA. Also, he is the Editor in Chief of International Journal of Intelligent Engineering Informatics (IJIEI), Inderscience Publishers, Olney, UK. Prof. Azar has worked as associate editor of IEEE Trans. Neural Networks and Learning Systems from 2013 to 2017. He is currently Associate Editor of ISA Transactions, Elsevier and IEEE systems journal. Dr. Ahmad Azar has worked in the areas of Control Theory & Applications, Process Control, Chaos Control and Synchronization, Nonlinear control, Renewable Energy, Computational Intelligence and has authored/co-authored over 200 research publications in peer-reviewed reputed journals, book chapters and conference proceedings. He is an editor of many Books in the field of Fuzzy logic systems, modeling techniques, control systems, computational intelligence, Chaos modeling and Machine learning. Dr. Ahmad Azar is closely associated with several international journals as a reviewer. He serves as international programme committee member in many international and peer-reviewed conferences. Dr. Ahmad Azar is a senior Member of IEEE since Dec. 2013 due to his significant contributions to the profession. Dr. Ahmad Azar is the recipient of several awards including: Benha University Prize for Scientific Excellence (2015, 2016, 2017 and 2018), The paper citation Award from Benha University (2015, 2016, 2017 and 2018). In June 2018, Prof. Azar has been awarded the Egyptian State Prize in Engineering Sciences, the Academy of Scientific Research and Technology of Egypt, 2017. In July 2018, he has been selected as a member of Energy and Electricity Research council, Academy of Scientific Research, Ministry of Higher Education. In Aug. 2018 he has been selected as senior Member of International Rough Set Society (IRSS). Prof. Ahmad Azar is the Chair of IEEE Computational Intelligence Society (CIS) Egypt Chapter, Vice chair of IEEE Computational Intelligence Society Interdisciplinary Emergent Technologies Task Force, vice-Chair Research Activities of IEEE Robotics and Automation Society Egypt Chapter, Committee member of IEEE CIS Task Force on Fuzzy Logic in Medical Sciences Also, he is the Vice-president (North) of System dynamics Africa Regional Chapter and an Academic Member of IEEE Systems, Man, and Cybernetics Society Technical Committee on Computational Collective Intelligence.