

## Guest Editorial Preface

# Special Issue on Advanced Applications in Computer Science and Information Systems: Part 1

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This special issue provides 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 during 16-17 April 2019 in addition to other regular submitted papers related to the themes of the special issue. The conference provided an excellent forum which contributes new results in all areas of computer science, Information Technology and computer systems. The conference focused on all technical and practical aspects of computing and informatics with applications in real-world and scientific problems. This special issue aims at providing an opportunity for researchers interested in the Advanced applications in Computer Science, information science, systems and technology to present the advances and latest developments in this area. The special issue is oriented towards both theoretical and applications aspects.

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

The first paper titled “Copy-Move Forgery Detection Based on Automatic Threshold Estimation” by Hegazi et al. proposes a copy-move forgery detection method. The proposed method is based on automatic estimation of the clustering threshold. The cutoff threshold of hierarchical clustering is estimated automatically based on clustering evaluation measures. Experimental results tested on various datasets show that the proposed method outperforms other relevant state-of-the-art methods.

The second paper titled: “A Robust and Blind 3D Mesh Watermarking Approach Based on Particle Swarm Optimization” by Mouhamed et al. presents a robust 3D mesh watermarking approach, which adopts an optimization method of selecting watermark vertices for 3D mesh models. The proposed approach can enhance the imperceptibility of watermarked model without affecting the robustness and capacity factors. The proposed watermark approach depends on an embedding algorithm that use a clustering strategy, based on K-means clustering algorithm in conjunction with the particle swarm optimization to divide the mesh model vertices into groups. Points of interest set (POIs) are selected from these clustered groups and mark it as watermark vertices where the (POIs) are invariant to most of the geometrical and connectivity attacks. Then, the proposed approach inserts the watermark bit stream in the decimal part of spherical coordinates for these selected watermark vertices. The experimental results confirm that the proposed approach proves its superiority compared with state-of-the-art techniques with respect to imperceptibility and robustness.

The third paper titled: “Automatic Gun Detection Approach for Video Surveillance” by by Mouhamed et al. presents an approach to detect pistols and guns in video surveillance systems. It uses deep learning in the classification and the detection processes. The proposed approach enhances the obtained results by applying Transfer Learning (TL). It employs two different DL techniques:

AlexNet and GoogLeNet. Experimental results verify the adaptability of detecting different types of pistols and guns. The experiments were conducted on a benchmark gun database called Internet Movie Firearms Database (IMFDB). The results obtained suggest that the proposed approach is promising and outperforms its counterparts.

The fourth paper titled: “Fusion Time Reduction of a Feature Level Based Multimodal Biometric Authentication System” by Mahmoud et al. deals with a multimodal biometric authentication method to confirm the identity of a person based on his face and iris features. This method depends on multiple biometric techniques that combine face and iris (left and right) features to recognize. It depends on extracting the features of the face using Rectangle Histogram of Oriented Gradient (R-HOG). The study applies a feature-level fusion using a novel fusion method which employs both the canonical correlation process and the proposed serial concatenation. A deep belief network was used for the recognition process. The performance of the proposed systems was validated and evaluated through a set of experiments on SDUMLA-HMT database. The results were compared with others, and have shown that the fusion time has been reduced by about 34.5%. The proposed system has also succeeded in achieving a lower equal error rate (EER), and a recognition accuracy up to 99%.

The fifth paper titled: “A Framework for Managing Big Data in Enterprise Organizations” by Ahmed et al. aims to propose a big data management framework that will handle all big data operation beginning with collecting data until making analysis and how new value can be created. The proposed framework considers other factors such as organization strategies, governance, and security.

The last paper titled: “A proposed frequent itemset discovery algorithm based on item weights and uncertainty” by Abu Zahra et al. proposes the single scan for weighted itemsets over the uncertain database (SSU-Wfim), which depends on the single scan frequent itemsets algorithm, and enhance it to deal with weighted items in an uncertain database. The results indicated the high performance in aspects of runtime and memory consumption of SSU-Wfim comparing with the UApriori algorithm.

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*Ahmad Azar has received the M.Sc. degree in 2006 and Ph.D degree in 2009 from Faculty of Engineering, Cairo University, Egypt. In 2014, he got a post- doctoral fellowship in 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: the 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 the 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 the 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.*