

Guest Editorial

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National Computer Symposium (NCS) is one of the prestigious national ICT symposiums held in Taiwan. It is intended to provide a forum for researchers, educators, and professionals to exchange their discoveries and practices, and to explore future trends and applications in computer technologies. The biennial symposium offers a great opportunity to share research experiences and to discuss potential new trends in the ICT industry. We invite some outstanding accepted papers in their extended versions and open for other submissions to this special issue. Each paper submitted to this special issue was rigorously reviewed by at least two reviewers in the corresponding research areas. Finally, we have seven papers for this special issue. A summary of the papers is outlined below.

In the paper entitled “*Multiple Task-driven Face Detection Based on Super-resolution Pyramid Network*” by Jianjun Li, Juxian Wang, Xingchen Chen, Zhenxing Luo, and Zhugang Song, they propose a multiple task-driven cascade detection networks based on super-resolution Pyramid for effectively detecting faces under some issues such as low-resolution faces under the lens, faces from blur, illumination, scale, pose, expression and occlusion. The design of the proposed algorithm not only recovers high frequency information lost in the sampling process, but also can handle multi-scale invariants.

In the paper entitled “*Application of Google Trends to Forecast Tourism Demand*” by Kun-Huang Hwang and Tiffany Hui-Kuang Yu, the authors proposes a systematic approach to obtain Google Trends search engine data, to explore usage of the data, and then to provide a forecast. They use Taiwan tourism demand as a study target, where both estimation and forecasting are done by the proposed method. The forecasting results are then compared with real data from the Taiwan Tourism Bureau. With more information, the forecasting approach with a heuristic improves overall model performance.

The paper entitled “*Mitigating DoS Attacks in SDN Using Offloading Path Strategies*” and authored by Tai-Siang Huang, Po-Yang Hsiung, and Bo-Chao Cheng, propose a method called “Avoid Passing High Utilization Bandwidth,” which aims to prevent the unloaded data putting additional load on the links when passing through the high bandwidth and find a suitable new path. A comparison of the maximum bandwidth

utilization using the proposed method with that of other algorithms showed that this method consistently produced the smallest bandwidth utilization. That is, the proposed method is a better mitigation method than those presented previously.

In the paper entitled “*Super connectivity and diagnosability of crossed cubes*” by Shiying Wang and Xiaolei Ma, they prove that an n -dimensional crossed cube CQ_n is tightly $(4n - 9)$ super 3-extra connected for $n \geq 7$ and the 3-extra diagnosability of CQ_n is $4n - 6$ under the PMC model ($n \geq 5$) and MM* model ($n \geq 7$).

In the paper entitled “*A New Method to Detect the Adversarial Attack based on the Residual Image*” by Feng Sun, Zhenjiang Zhang, Yi-Chih Kao, Tianzhou Li, and Bo Shen, they consider the case that the adversarial attack is the undetected perturbation added to the input. They design a new efficient model based on residual image which can detect this potential adversarial attack. Based on the residual image they got, the detection mechanism can help detect whether it is an adversarial image or not. Experimental results show that the new detection method can detect the adversarial attack with high effectivity.

In the paper entitled “*Finding Potential Objects in Uncertain Dataset by Using Competition Power*” by Sheng-Fu Yang, Guanling Lee, and Shou-Chih Lo, they propose an efficient method to help users screen out better data objects in multi-dimensional uncertain dataset. Furthermore, an appropriate probability model is also proposed to objectively calculate the scores of uncertain data. According to the experimental results on real dataset, the proposed method can find the potential data objects efficiently.

In the paper entitled “*The Prototype of the Integration between Low Cost Single Private LoRa Gateway and Public AIS NB-IOT*” by Ekkarat Boonchieng, Anukit Saokaew, and Oran Chieochan, they develop a prototype of the low cost single private LoRa gateway and LoRa node with GPS as an alternative communication channel for IOT work. The research studied the distance of the communication between the low cost single private LoRa gateway and the LoRa node with the GPS, RSSI (Received Signal Strength Indicator), received completed packages, incomplete packages and lost packages. The result of the study was satisfied.

Finally, we would like to express our sincere gratitude to all reviewers and authors for their expertise and efforts in making helpful comments and significant contributions, respectively, for this special issue. Without their hard work, the special issue would not be possible. Also, we want to thank Dr. Han-Chieh Chao, the Editor-in-Chief of JIT journal, for his encouragement and support to publish this special issue and to Ms. Sharon Chang, the Assistant Editor, for her professional help during the preparation of this special issue.

Guest Editors



Ching-Nung Yang obtained his Ph. D. degree in Electrical Engineering from National Cheng Kung University. His B.S. and M.S. degrees, both were awarded in Department of Telecommunication Engineering from National Chiao Tung University. Dr. Yang served in National Dong Hwa University since 1999. His current title is Professor in Department of Computer Science and Information Engineering. He had been Visiting Professor to University of Missouri Kansas City, University of Milan, and University of Tokyo. He is currently a Fellow of IET (IEE) and an IEEE senior member. Professor Yang has done extensive researches on visual cryptography and secret image sharing, and is the chief scientist in both areas. In fact, a very important innovation of visual cryptography, the probabilistic visual cryptography, was firstly proposed by Professor Yang. His areas of interest include error correcting code, multimedia security, cryptography, and information security. He has authored two books and has published over 200 (including more than 100 SCI-indexed papers) professional research papers in the areas of information security and coding theory. In the meantime, he has served/is serving in international academic organizations. He serves as technical reviewers for over 40 major scientific journals in the areas of his expertise, and serves as editorial boards and editors of special issues for some journals. Also, he was invited as chairs, keynote speakers, and members of program committees for various international conferences. He is the recipient of the 2000, 2006, 2010, 2012, and 2014 Fine Advising Award in the Thesis of Master/PhD of Science awarded by Institute of Information & Computer Machinery.



Sheng-Lung Peng is a Professor of the Department of Computer Science and Information Engineering at National Dong Hwa University, Hualien, Taiwan. He received the BS degree in Mathematics from National Tsing Hua University, and the MS and PhD degrees in Computer Science from the National Chung Cheng University and National Tsing Hua University, Taiwan, respectively. He is now the Dean of the Library and Information Services Office of NDHU, an honorary Professor of Beijing Information Science and Technology University of China, and a visiting Professor of Ningxia Institute of Science and Technology of China. He serves the director of the ICPC Contest Council for Taiwan region, a director of Institute of Information and Computing Machinery, of Information Service Association of Chinese Colleges and of Taiwan Association of Cloud Computing. He is also a supervisor of Chinese Information Literacy Association, of Association of Algorithms and Computation Theory, and of Interlibrary Cooperation Association in Taiwan. His research interests are in designing and analyzing algorithms for Bioinformatics, Combinatorics, Data Mining, and Networks. Dr. Peng has edited several special issues at journals, such as Soft Computing, Journal of Internet Technology, Journal of Computers, MDPI Algorithms, and so on. He published over 100 international conferences and journal papers.



Ruay-Shiung Chang received his B.S.E.E. degree from National Taiwan University in 1980 and his Ph.D. degree in Institute of Decision and Computer Science from National Tsing Hua University in 1988. After graduation, he had worked for Chung Shan Institute of Science and Technology, National Taiwan University of Science and Technology and National Dong Hwa University. Right now, he is the President of National Taipei University of Business. His research interests include Internet, wireless networks, and cloud computing. NTUB is a traditional and the oldest business university in Taiwan. Dr. Chang hopes to bring modern Information and Communication Technology into the teaching and research of NTUB. Dr. Chang received the Outstanding Information Technology Elite Award from the Taiwan's Information Month Committee in 2009. In 2017, Dr. Chang received the Exemplary Teacher's Award from the Venerable Master Hsing Yun Public Education Trust Fund for his longtime dedication to higher education.