
Editorial

Zhaohui Liang*

York University,
4700 Keele Street,
Toronto, ON, M3J 1P3, Canada
Email: stan79@yorku.ca
*Corresponding author

Honglai Zhang

School of Medical Information and Engineering,
Guangzhou University of Chinese Medicine,
232 Waihuandong Rd,
Guangzhou Higher Education Mega Center,
Panyu District, Guangzhou, 510006, China
Email: kjkfk@gzucm.edu.cn

Guozheng Li

Department of Control Science and Engineering,
Tongji University,
Shanghai, 4800 Cao An Gong Rd,
Jiading District, 201804, China
Email: gzli@tongji.edu.cn

Jimmy Xiangji Huang

School of Information Technology,
York University,
4700 Keele Street,
Toronto, ON, M3J 1P3, Canada
Email: jhuang@yorku.ca

Biographical notes: Zhaohui (Stanley) Liang is a Postdoctoral Fellow at the School of Information Technology, York University. He received his MPH degree from Sun Yat-Sen University and PhD degree from Guangzhou University of Chinese Medicine. His academic interest is cross-discipline research on applications of information technology in medicine. He is the Workshop Chair on Living System and Artificial Intelligence in the 2012 International Conference on System Simulation (ICSS 2012) in Shanghai China, Programme co-Chair of 2012 IEEE International Conference on Bioinformatics and Biomedicine (BIBM 2012) in Philadelphia, USA, and Programme co-Chair of 2013 IEEE International Conference on Bioinformatics and Biomedicine (BIBM 2013) in Shanghai China. He has published more than 20 papers on health informatics and bioinformatics in SCI indexed journals and in top EI indexed conference proceedings.

Honglai Zhang is Professor and School Director in School of Medical Information and Engineering, Guangzhou University of Chinese Medicine. He is also a TCM practitioner specialised in acupuncture. He received his Master degree from Tianjin University of Chinese Medicine, and MD from Guangzhou University of Chinese Medicine. His academic interest includes information system in hospitals, infrastructure of electronic medical record (EMR), and methodology of information technology in TCM. He has been an active participant to the International Workshop on Information Technology for Chinese Medicine since 2012. He has published two papers in TCM informatics studies and numerous works in the BIBMW proceedings. He is one of the programme chairs and organisers of the Fifth International Workshop on Information Technology for Chinese Medicine in December 2014.

Guozheng Li is a Professor of the College of Electronics and Information Engineering of Tongji University, Head of Levis Group, Executive Committee Member and Associate Secretary of CAAI Machine Learning Society, ORSC Computational Biology Society, Associate Information Director of ACM-SIG Bioinformatics. His research is funded by grants from the Natural Science Foundation of China, National Key Laboratory for Novel Software Technology, and Science and Technology Commission of Shanghai Municipality. He is the Associate Editor of *IJMLC*, *JCIB* and *IJCIBSB*, and Editor on Board of *IJDMB*, *JETWI*, *IJCBD*, *IJAISC* and *IJFIPM*.

Jimmy Xiangji Huang received his PhD in Information Science from City University in London, England, Full Professor and Director in the School of Information Technology, and Director of Information Retrieval and Knowledge Management Research Lab of York University. He has published over 150 papers in top journals (e.g., *ACM TOIS*, *JASIST*, *IPM*, *IEEE TKDE*, etc.), book chapters and international conference proceedings (e.g., *ACM SIGIR*, *ACM CIKM*, *COLING* and *IEEE ICDM*, etc.). He was the General Conference Chair for the 19th International ACM CIKM Conference and General Programme Chair for IEEE/WIC/ACM International Joint Conferences on Web Intelligence and Intelligent Agent Technology in 2010.

Traditional Chinese medicine (TCM) is a key component of the Chinese cultural heritage with thousands-of-years history in research and healthcare delivery, which contributes significantly to the prosperity the Chinese and Southeastern Asian culture. After the introduction of western biomedicine to China, TCM still plays an inseparable role in the healthcare system of China as one of the mainstream medical treatments. As China harmonises to the global community, TCM is receiving gradual acceptance in the western world. As a result, studies on TCM attract more and more attention from researchers with various knowledge backgrounds and technologies.

Computer aid healthcare (CAH) is a new cross-discipline branch in medicine when computer science and information technology are combined with research of health science. And we are provoking to witness the application of CAH has extended to the studies of TCM and other therapies of complementary and alternative medicine (CAM).

In order to provide a forum for TCM researchers and practitioners to share and exchange their novel and excellent ideas regarding the applications of computers and information technologies to TCM, the Fourth International Workshop on Information Technology for Chinese Medicine (ITCM 2013) in conjunction with the 2013 IEEE International Conference on Bioinformatics and Biomedicine (BIBM 2013) was held in Shanghai, China on 18th–21st December 2013. Prof. Baoyan Liu, Prof. Chuanjian Lu and Prof. Guozheng Li co-chaired the workshop. Top TCM experts were invited to present their inspiring research outcomes and prospect the future of TCM. However, numerous

scientists and researchers were unable to introduce their excellent work in ITCM 2013 due to time limit of the workshop.

Chaired by Prof. Baoyan Liu, the program committee of ITCM 2013 consisted of 12 members from various parts of the world. All submitted papers have been peer-reviewed by the program committee members or invited external reviewers. A total of 93 papers have been selected and published in Proceedings of the 2013 IEEE International Conference on Bioinformatics and Biomedicine Workshops (IEEE-BIBMW) (ISBN 978-1-4799-1309-1).

The publishing purpose of the special issue on health and clinical informatics in Chinese medicine is to collect and disseminate the best and innovative research works in the cross-discipline of information technology and traditional medicine. Out of the 93 published papers published in the BIBMW 2013 proceedings, eight articles are invited to submit their extended manuscripts to the special issue, and finally four of them are accepted for publication.

This special issue reflects the up-to-date progress in computer applications in TCM. Four papers are finally accepted from the total eight submissions. The paper entitled 'Investigating the effects of climate factors on bacillary dysentery transmission in Harbin City, China' by Feng-Feng Shao et al. introduces a prediction model to identify the risk factors to the incidence bacillary dysentery. The least absolute shrinkage and selection operator algorithm is applied. It is an interesting instance for using the climate factor theory in TCM for disease prediction. Chengjun Wang et al. presents an article entitled 'Multiple cues region growing segmentation on tongue image'. In this paper, the authors present a region-growing algorithm for automatic tongue diagnosis by applying to cues of symmetry, colour and texture. The proposed algorithm is proved effective to distinguish tongue image segmentation, thus it shows a promising solution for automatic tongue pattern recognition in TCM diagnosis. Gang Zhang et al. present the semi-supervised learning models for electronic health data. In order to tackle the demerits of supervised learning that requires manual labelling or scoring, the article initiates two semi-supervised models respectively based on support vector machine (SVM) and kernel regularised least squares (KRLS) to analyse a large amount of unlabelled data after the models are improved by a small proportion of supervised data. The paper concludes that semi-supervised model is effective to health data learning and decision making. Finally, Xiang Zhang et al. provide a theoretical exploration on case-based reasoning (CBR) and its application to TCM diagnosis and healthcare decision making for ontology. The article focuses on the complexity of clinical visit and diagnosis, and it points out that assistant-decision-making (ADM) by computers is a solution to enhance the efficiency and accuracy for both western medicine and TCM. Chen Zhaoxue explored the myth of traditional Chinese culture figures: Hetu and Lai's Taiji by combining them with golden spirals in mathematics. Then, he extended his observation to Chinese medicine and discovered the related laws are applicable to the many treatment mechanism of Chinese medicine. We believe as more efforts are made in this new branch, excellent outcomes will be coming in the future. The editors would like to express their gratitude to the authors for their contribution to this special issue, especially to the corresponding authors, the Chair of the steering committee of BIBM, Prof. Xiaohua Tony Hu, and the Programme Chairs of ITCM: Prof. Baoyan Liu, Prof. Chuanjian Lu, and Prof. Guozheng Li. The relevant work is supported by Natural Science Foundation of China, Grant No. 81373883 and 81274003.