Editorial

Zhao-Hui Liang

The Second Affiliated Hospital,
Guangzhou University of Chinese Medicine,
Guangzhou 510120, China
E-mail: liang_zhao_hui@163.com

Xuezhong Zhou

School of Computer and Information Technology,
Beijing Jiaotong University,
Beijing 100044, China
E-mail: xzzhou@bjtu.edu.cn

Guo-Zheng Li

Department of Control Science and Engineering,
Tongji University,
Shanghai 201804, China
E-mail: gzli@tongji.edu.cn

Biographical notes: Zhao-Hui Liang is Associate Professor of Guangzhou University of Chinese Medicine, Deputy Chief Physician of Guangdong Provincial Hospital of Chinese Medicine. He was an invited speaker of the 2011 IEEE International Conference on Bioinformatics and Biomedicine (BIBM 2011), chair of the Workshop on Living System and Artificial Intelligence in the 2012 International Conference on System Simulation (ICSS 2012), and Program Co-chair of 2012 IEEE International Conference on Bioinformatics and Biomedicine Workshop – The Third International Workshop on Information Technology for Chinese Medicine (ITCM2012). His main research interests are study methodology of Chinese medicine, integrative medicine and complementary and alternative medicine (CAM), clinical trials on acupuncture and Chinese medicine for pain and neurosis and depressive disorders, and the application of bioinformatics and e-Health technology in research of Chinese medicine and integrative medicine.

Xuezhong Zhou is currently an Associate Professor in School of Computer and Information Technology, Beijing Jiaotong University, China. He received a PhD degree in Computer Science from Zhejiang University, China and carried out postdoctoral research at China Academy of Chinese Medical Sciences. His research interests cover machine learning and data mining with focus on its application to biomedical informatics. Particularly, he takes main efforts to develop novel computational approaches for real-world traditional Chinese medicine (TCM) clinical data warehousing, knowledge discovery and complex data analysis, and the complex network approaches to connect TCM to molecular biology.

Guo-Zheng Li is Professor with College of Electronics & Information Engineering at Tongji University, Associate Information Director of ACM-SIG

Bioinformatics. He obtained his PhD degree from Shanghai Jiao Tong University in 2004. He is interested in pattern recognition and bio-medical data mining. He is Principle Investigator of several projects under grants of Natural Science Foundation of China. He has published 100+ refereed papers. He has written five chapters. He is Associate Editor of *IJMLC*, *JCIB* and *IJCIBSB*, Editor on Board of *IJDMB, JETWI, IJCBDD, IJAISC and IJFIPM*, Program co-Chair of IJCBS09, ITCM10, ITCM11, ITCM12, IEEE-BIBM13.

Traditional Chinese medicine (TCM) has been widely practiced for thousands of years in China. It is still one of the main medical systems in East Asia nowadays. Besides, it is gaining more acceptances in western world. Therefore, research on TCM and herbal medicine attract more and more scientists. To provide a platform for researchers and TCM practitioners to communicate and share their excellent ideas, the *International Workshop on Information Technology for Chinese Medicine (ITCM)* in conjunction with the *2012 IEEE International Bioinformatics and Biomedicine (BIBM2012)* was held at Philadelphia, USA on 4th October, 2012. Dr. Dong Xu, Dr. Guo-Zheng Li and Dr. Zhaohui Liang chaired the workshop. Four experts in TCM research field present their achievements and prospect the future of TCM informatics. Heated discussion is raised the whole afternoon in the workshop. A wider range of researchers pay close attention to the workshop and the progress in TCM. Due to limited time of the workshop, more scientists and related researchers have no chance to present their valuable work in the TCM workshop.

Dr. Zhaohui Liang chaired it. The programme committee consists of 12 committee members around the world. All submitted papers have been peer-reviewed by the programme committee members or invited external reviewers. A total of 52 papers have been selected and published in *Proceedings of the 2012 IEEE International Conferences on Bioinformatics and Biomedicine Workshops (IEEE-BIBM Workshops 2012)* (ISBN 978-1-4673-2558-5).

This special issue is to bring together the latest/innovative research works in the cross field of information technology and TCM. Out of 52 papers, six are invited to expand and publish in this issue. The first paper 'The neurological principle: how traditional Chinese medicine unifies body and mind' by Dr. Stefan Jaeger attempts to explain the classical concept of body-mind unity in the philosophy of TCM in a mathematical sense. A new linear information-theoretical model for neural signal processing at synapses was proposed as new explanation of the concepts and phenomena in TCM. And it reveals that the basic philosophical elements such as Yin and Yang in TCM are supported by strong mathematical foundation. The second paper 'TCMSearch: an in-use semantic web infrastructure for traditional Chinese medicine' introduced a semantic web system to integrate a variety of TCM databases. It attempts to establish the data exchange and mining infrastructure based on TCMSearch, which is unified semantic system for a wide range of TCM concepts. It is a successful application of semantic web technologies to represent traditional Chinese medical knowledge and to promote the cross-cultural and interdisciplinary dialogues between Chinese medicine and western medicine. The third paper 'Progress in research of peritoneal dialysis complicated with peritonitis' by Deng and Lin review the latest progress on the causal morbid of peritoneal dialysis and aims to explore the role of nursing in management of peritonitis as

complication of peritoneal dialysis. Ms. Peiling Su et al. presented the paper 'Sore throat to patients with IgA nephropathy: traditional Chinese medicine treatment', which aims to apply Chinese medicine to treat sore throat as complication of IgA nephropathy. The treatment was based on the traditional syndrome differentiation strategy, which reveals the unique idea on personalised medicine by TCM. In paper 'Modelling traditional Chinese medicine therapy planning with POMDP' by Dr. Feng et al., the authors introduce partially observable Markov decision process to solve therapy planning in Chinese medicine, which shows to be helpful in the demonstration of order prescriptions for type II diabetes. The paper 'Subhealth state classification with AdaBoost learner' by Mr. Sun et al. discusses the subhealth state classification by using different machine learning techniques, where Adaboost performs the best among the learners and shows to be practical with the accuracy above 80% in subhealth state and types classification.

This special issue reveals state-of-the-art progress in TCM informatics. We believe more people will pay attention to the new trend and contribute to the development of TCM and TCM informatics, more great work will appear on the foundation of this issue. Many thanks go to the authors for their contribution to this special issue, especially to the corresponding authors: Dr. Stefan Jaeger, Ms. Li-Li Deng, Dr. Tong Yu, and Dr. Wei Mao. Thanks to the BIBM steering committee Chair Xiaohua Hu, the ITCM Program Chairs of Dr. Dong Xu, Dr. Zhaohui Liang and Dr. Guo-Zheng Li. This work was supported by the Natural Science Foundation of China under Grant No. 61273305.