
Editorial

Wenxue Hong* and Jialin Song

School of Electrical Engineering,
Yanshan University,
Qinhuangdao 066004, Hebei Province, China
Email: hongwx@ysu.edu.cn
Email: sjl@ysu.edu.cn
*Corresponding author

Jinjia Wang

School of Information Science and Engineering,
Yanshan University,
Qinhuangdao 066004, Hebei Province, China
Email: wjj@ysu.edu.cn

Cunguo Yu

School of Electrical Engineering,
Yanshan University,
Hebei Province, China
and
Department of Traditional Chinese Medicine,
Haigang Hospital in Qinhuangdao,
Qinhuangdao 066004, Hebei Province, China
Email: cunguoyu@126.com

Biographical notes: Wenxue Hong received his MS degree in Electrical Measurement Technology and Instrument from Harbin Institute of Technology, Harbin, China in 1983. Currently, he is a Professor and Supervisor of a PhD student in the Department of Biomedical Engineering, Yanshan University, Qinhuangdao, China; and he is also a part-time Professor in Guangzhou University of Chinese Medicine, Guangzhou, China. His research interest includes the information fusion, visualisation of pattern identification, knowledge discovery, knowledge visualisation and TCM engineering.

Jialin Song received her BS degree in Mechanical and Electrical Engineering from Henan University of Technology, Henan, China in 1991 and MS degree in Business Administration from Yanshan University, Qinhuangdao, China, in 2008. Currently, she is a Senior Experimentalist with the Biomedical Engineering Department, Yanshan University, Qinhuangdao, China. Her research interest includes knowledge discovery, pattern recognition and intelligent diagnosis of Traditional Chinese Medicine.

Jinjia Wang holds a PhD, and is a Professor at the School of Information Science and Engineering, Yanshan University in China. His research interest includes pattern recognition and signal processing.

Cunguo Yu received his PhD degree of Traditional Chinese Medicine from Heilongjiang University of Chinese Medicine in 2016. He is a Professor of Chinese Medicine in Haigang Hospital in Qinhuangdao, and a PhD in group of Prof. Wenxue Hong in Yanshan University. His research interest includes Traditional Chinese Medicine and integrated traditional Chinese and western medicine for the prevention and treatment of cancer.

Traditional Chinese Medicine (TCM) is a medical science that studies human physiology and pathology, disease diagnosis and prevention, and health and rehabilitation. Strictly speaking, TCM is ‘a comprehensive science that studies the law of health and disease transformation and its

prevention, diagnosis, treatment, rehabilitation and healthcare in traditional Chinese medicine of human life activities with the theory and practical experience of traditional Chinese medicine as the main body’. The main characteristics of TCM are holistic view and syndrome

differentiation. TCM has its own theoretical system, with the method of ‘correlation of all four examinations’ to examine the state of human health, with special terms to describe the state of ‘disease, syndrome, symptom’ of human health, and with acupuncture, Chinese medicinal herb and moxibustion as the main body to adjust the state of human health. Thousands of years of medical practice has proved the accuracy of the curative effect of TCM. How to combine TCM with modern science and technology and promote the development of TCM itself is a very meaningful topic.

The modernisation and scientisation of TCM face five problems: first, how to use modern engineering and mathematical theory to describe the basic principles of diagnosis and treatment of diseases and assessment of human health; second, how to discover the knowledge of the rule of prescription compatibility and diagnosis and treatment experience in TCM works and medical cases, so as to build the knowledge base of TCM diagnosis and treatment of diseases; third, how to combine TCM with modern engineering technology and design diagnosis and treatment instruments that conform to the principles of traditional Chinese medicine; fourth, how to integrate the data of objective testing instruments with the data collected by TCM, evaluate human health more comprehensively, and realise the quantitative diagnosis of human health in TCM; fifth, how to combine TCM with artificial intelligence technology and internet technology to create a new technology platform to serve human health.

The purpose of this special issue is to creatively answer the above key scientific questions from different perspectives. The publication of special issue is to attract the attention and reference of relevant researchers. The main characteristics are: from the perspective of modern science and engineering, to examine and establish the theory and method of describing TCM, to organically integrate mathematical theory, engineering technology and TCM, to describe the overall framework of state TCM, and to lay the foundation for the quantification and scientisation of the modernisation of TCM. The main contents include: state TCM theory, partial order form structure analysis knowledge discovery mathematics theory, machine learning algorithm, TCM medical knowledge and case knowledge discovery, TCM prescription compatibility knowledge discovery, infrared thermal image human health status assessment, TCM diagnosis and treatment instrument design, TCM music therapy, etc.

This special issue is the cornerstone of the theory of state Chinese medicine, and it is the editors’ greatest wish to cast a brick to attract jade.

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