Editorial

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1 Introduction

In the past few years, the discovery of small-world and scale-free properties of many natural and artificial complex networks has stimulated a great deal of interest in studying the underlying organising principles of various complex networks, which has led to dramatic advances in this emerging and active field of research. The past decade has witnessed significant progresses in the field of complex networks, including the deeper theoretical understandings as well as the successful applications to various large-scale complex networking systems. This special issue focuses on the highly multidisciplinary

researches on the methods, theories, and applications of complex network systems. It aims at promoting the latest researches on complex networks, which serves as a representative collection and frontier exchange of this fast developing field.

This special issue of *International Journal of Systems Control and Communications (IJSCC)* presents 11 original papers, which are selected from 25 papers submitted by authors for responding the call of the special issue on 'Complex Network Systems: Methods, Theories, and Applications'. The special issue is organised by Professor Zengqiang Chen, Professor Xiang Li and Professor Guoyuan Qi. All submitted papers were thoroughly reviewed once more by at least two independent experts and finally, 11 papers were accepted for publication in this special issue.

The contributions of this issue reflect some recent research advances of complex networks fields. The content of these papers covers modelling, analysis, control, synchronisation and application on complex network system and multi-agent system.

2 Focus on this special issue

Papers were selected on the thoroughness of techniques employed rather than the basis of fundamental ideas/concepts. In this special issue the following 11 papers are included.

- In the paper 'Global stabilisation of Lur'e network' by Zengqiang Chen, Linying Xiang, Guan Ron Chen, Zhongxin Liu and Zhuzhi Yuan.
- In the paper 'Growing models from deterministic to random hierarchical networks' by Juan Zhang and Huan Huang.
- In the paper 'Synchronisation of complex networks via partial contraction principle' by Kezan Li, Weigang Sun and Xinchu Fu.
- In the paper 'Consensus of multi-agent moving systems with heterogeneous communication delays' by Hong-yong Yang and Si-ying Zhang.
- In the paper 'Complex dynamics and stability of Hopfield neural networks with delays' by Shu-juan Guo, Jun-biao Guan and Xin-chu Fu.
- In the paper 'Network Complexity Pyramid with five levels' by Jin-Qing Fang.
- In the paper 'The complex software network evolution of Java Development Kits: topological properties and design principles' by Mingjiang Shi, Xiang Li and Xiaofan Wang.
- In the paper 'H_∞ control for spatio-temporal switching networks with coupling delays' by Jing Yao, Weisheng Xu and Youling Yu.
- In the paper 'A communication model on implementing anycast service in mobile IPv6 networks' by Xiao-Nan Wang and Huan-Yan Qian.
- In the paper 'Synchronisation of Lorenz systems via combining drive and Delayed Feedback Control methods' by Li-lan Tu, Shui-fang Yin and Jia Hu.
- In the paper 'Formation control of multi-agent system based on potential function in complex environment' by Li Wang, Zengqiang Chen and Zhongxin Liu.

The editors wish to thank Professor Ge Guo (Editor-in-Chief of IJSCC) for providing the opportunity to edit this special issue on 'Complex Network Systems: Methods, Theories, and Applications'. The editors also wish to thank the referees who have critically evaluated the papers within the short stipulated time. Finally, we hope the readers will enjoy the content of this special issue and find it very useful.