Invited Session “Advanced Intelligent Control of Hypersonic Flight Control”

Due to the high speed flying, a more reliable and cost efficient way to access space is presented by hypersonic flight vehicles (HFVs). Controlling HFV is challenging due to the complex dynamics while there is not enough experiment data. To control such dynamics, intelligent control provides the possible solution without knowing exact value of the aerodynamic parameters. Note that the dynamic environment is usually changing and the autonomous systems should adapt themselves accordingly. In this context, on one hand, more efforts should be focused on the methodology of the learning system. For example, the fast adaptation and self-organizing capability are essentially required. On the other hand, the great advantage of advanced analysis tools should be taken to enhance the control performance. Thus, deep intelligence should be integrated tightly with nonlinear design for complex control tasks

This session will cover a broad spectrum of advanced nonlinear control and specially focus on dealing with new problems encountering in control of HFV. This special issue aims at providing a forum for researchers and practitioners in the field of aerospace engineering and control engineering to disseminate their new ideas and research results. We are soliciting original high-quality research papers on topics of interest, but are not limited to the following main topics:

* Reinforcement Learning Control of Hypersonic Flight Vehicle
* Neural/Fuzzy Hypersonic Flight Control
* Data-Driven Hypersonic Flight Control
* Fuzzy Fault Tolerant Hypersonic Flight Control
* Composite Learning Based Intelligent Control with Application to HFV
* Self-organizing Intelligent Control with Application to HFV
* Disturbance Observer Based Intelligent Control with Application to HFV

**Bin Xu**, Northwestern Polytechnical University, Xi’an, China

Email: binxu@nwpu.edu.cn

**Dr Bin Xu** is currently Professor with School of Automation, Northwestern Polytechnical University. He received the Ph.D. degree in Computer Science from Tsinghua University, China, 2012. From Jul 2012 until now, he is working at School of Automation, Northwestern Polytechnical University. His research interests include computation intelligence, intelligent control and adaptive control with application on flight dynamics, robotic systems. He is currently associate editor of Neurocomputing, International Journal of Advanced Robotic Systems.

**Mou Chen**, Nanjing University of Aeronautics and Astronautics, Nanjing, China

Email: chenmou@nuaa.edu.cn

**Prof. Mou Chen** is currently Professor with College of Automation Engineering, Nanjing University of Aeronautics & Astronautics. He received his B.Sc. degree in material science and engineering at Nanjing University of Aeronautics & Astronautics, Nanjing, China, in 1998, the M.Sc. and the Ph.D. degree in Automatic control engineering at Nanjing University of Aeronautics & Astronautics, Nanjing, China, in 2004. He was an Academic Visitor at the Department of Aeronautical and Automotive Engineering, Loughborough University, UK, from November 2007 to February 2008. From June 2008 to September 2009, he was a research fellow in the Department of Electrical and Computer Engineering, the National University of Singapore. He was a senior Academic Visitor at the School of Electrical and Electronic Engineering, The University of Adelaide, AUS, from May 2014 to November 2014. His research interests include nonlinear system control, intelligent control, and flight control. He has authored three books, over 100 journal and conference papers, and book chapters. He is the Associate editor of Neurocomputing, etc.

Xiaoxiang Hu, Rocket Force University of Engineering, Xi’an, China

Email: hxx820605@163.com.

Dr Xiaoxiang Hu is currently Lecturer with Department of Control Engineering, Rocket Force University of Engineering. He received the Ph.D. degree in Control Theory and Applications from Rocket Force University of Engineering, China, 2012. From Jul 2012 until now, he is working at Department of Control Engineering, Rocket Force University of Engineering. His research interests include fuzzy control, sliding mode control, nonlinear control and adaptive control with application on flight vehicles.

**Potential contributors:**

Hu Xiaoxiang, Rocket Force University of Engineering

Cai Guangbin, Rocket Force University of Engineering

Li Peng, National University of Defense Technology

Zong Qun, TianJin University

Bailing Tian, TianJin University

Yonghua Fan, Northwestern Polytechnical University

Wenxing Fu, Northwestern Polytechnical University

Chen Mou, Nanjing University of Aeronautics and Astronautics

**Bin Xu**, Northwestern Polytechnical University