The 2nd China-Japan Joint Workshop on Control

– Control of Nonsmooth, Switched, and Hybrid Systems

August 6, 2006, International Conference Center, Victories Hotel,
Harbin, Heilongjiang, China

Hosted by Research Center of Control and Simulation, Dept. of
Astronautic Engineering and Mechanics, School of Astronautics, Harbin Institute of Technology

The First "China-Japan Joint Workshop on Control–Advanced Robust Control and Adaptive Control: Theory and Applications" was held in Fragrant Hill Hotel, Beijing, September 22 -26, 2004,. The workshop was financially sponsored by NSFC and JSPS. More than twenty-six papers were presented at the workshop, and that selected papers were published by Tsinghua University Press-Springer as a book:*Advanced Robust Control and Adaptive Control: Theory and Applications*, Edited by D. Cheng, Y. Sun, T. She, and H. Ohmori.

The second China-Japan Joint Workshop will be held on August 6, 2006, at Harbin Institute of Technology, Harbin, China. It is a pre-conference workshop of the 25th Chinese Control Conference, which will be held in Harbin, August 7-10, 2006. The Workshop is hosted by the Research Center of Simulation and Control, Harbin Institute of Technology, and organized by the steering committee, headed by Professor Yu Yao, who is the president of School of Astronautics.

The aim of this workshop is to provide a forum for scientists on automatic control from both China and Japan to exchange contemporary research results and to promote the applications of advanced control theory to practical engineering problems so that to enhance the development and spread of new theory and control technologies for the complex systems with non-smooth, switching, and hybrid properties. The workshop will focus on the control theory for *nonsmooth, switched, and hybrid systems* and its applications in self-driven hybrid systems such as the power systems for aircrafts, land vehicles, mechanical and electrical systems. The workshop program consists of some keynote addresses and regular lecture presentations. The selected papers will be edited as another book that will be published jointly by Tsinghua University Press and Springer.

Co-Sponsors:

Research Center of Simulation and Control, Harbin Institute of Technology
Technique Committee on Control Theory, Chinese Association of Automation, China
IEEE CSS Beijing Chapter, China
The Research Committee on Advanced Powertrain Control Theory, SICE, Japan
Committee of Adaptive Control Theory, SICE, Japan
Committee of Electric Mathematics, Chinese Association of Electrical Engineering, China

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Program

8:30-8:35   **Opening Address**

> *Yu Yao, HIT, China*

8:35-9:10   **Keynote Address 1**

> Recent Trend in Switchiing, Hybrid System Theory
> *Daizhan Cheng, Chinese Academy of Science, China*

9:10-9:45   **Keynote Address 2**

> The Fillipov-Framework for Discontinous Systems,
> *Katsutoshi Tamura, Sophia University, Japan*

9:45-10:00   **Coffee Break**

10:00-12:00   **Lecture Session 1**

> 1. Observer Design for Leader-Following Consensus of Multi-Agent System with Active Leader
>   *Yiguang Hong, Chinese Academy of Science, China*
> 2. A design of decentralized robust full-MRACS based on sliding mode control
>   *Yazdan Babafa-Toosi and Hiromitsu Ohmori, Keio University, Japan*
> 3. Finite-time Adaptive Control
>   *Y.G. Hong, Chinese Academy of Science, China*
>   *and Zhongping Jiang, Polytechnic University, USA*
> 4. Mathematical Theory of Multi-agent Coordination
>   *Long Wang, Beijing University, China*
> 5. Prospects of hybrid system theory applying to missile with lateral control
>   *Yao Yu, Harbin Institute of Technology, China*
> 6. Positioning Control of Hydraulic Actuator with Uncertain Input Nonlinearity
>   *Kazuhisa ITO and Tielong Shen, Sophia University, Japan*

12:00-13:30   Lunch

13:30-14:05   Keynote Address 3

Control Issues in Hybrid Vehciles
    Minggao Ouyang, Tsinghua University, China

14:05-14:40   Keynote Address 4

New Challenges in Powertrain Control
    Junichi Kako, Toyota Motor Corporation, Japan

14:40-14:50   Coffee Break

14:50-17:10   Lecture Session 2

1. Optimal Switching control of invertors in power electronics
    ——— A Constrained Dynamic Optimization Approach
  Kangzhi Liu, Chiba University, Japan
2. Control Strategies and Problems on FAW Hybrid Public Bus
  Cui Shumei and Zheng Wei , HIT, China
3. Robust control of car-like platforms
  Xiaoming Hu, Royal Institute of Technology, Sweden
4. Nonlinear robust control of power systems
  Yuanzhang Sun, Tsinghua University
5. A Marshaling Freight Cars in Freight Train Switchyard Using Reinforcement
   Learning Method
  Akira Inoue, M. Deng, T. Harada, Y. Hirashima, Okayama University, Japan
6. Non-synchronized Output Feedback Controller Design of Discrete Time Piecewise
   Linear Systems
  Gang Feng, City University, Hong Kong
7. A Design Approach for Observer-based Robust Traction Control with PMSM
  Kai Zheng, Tielong Shen, Yu Yao, HIT, China

17:10-17:30   Closing Address

Challenges in Simulation and Control
    Zicai Wang, Harbin Institute of Technology, China

18:00-   Banquet