School of Automation

HUAZHONG UNIVERSITY OF SCIENCE & TECHNOLOGY

# SEMINAR

# Control of Complex Robotic Systems: From Challenges to Real-Time Experiments

**November 16th, 2016 at 10:00**

Huazhong University of Science and Technology (HUST) N1 Building, Room Middle 311


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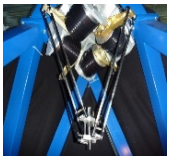
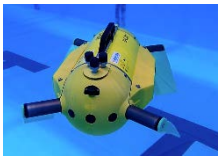




## Abstract of the talk


Robotics was initially, for a long time, guided by industry needs. Indeed, the early years of robotics was largely focused on manipulator arms and simple factory automation tasks. The cost of computation, the lack of good sensors, and the luck of fundamental understanding of robots control were primary barriers to progress.

The first control systems for robots were designed to control independently each axis as a Single-Input-Single-Output (SISO) linear system, for some basic tasks. However, the consideration of new complex tasks and applications required a deeply understanding of complex nonlinear dynamics of robots. Besides, it has motivated the development of new theoretical advances in different control fields which has enabled more sophisticated applications.

Nowadays, robotic control systems are highly advanced, including manipulators, underwater and flying robots, mobile robots, medical robots, parallel robots, humanoid robots and others.

The objective of this talk is to highlight the control challenges of some of these robotic systems and to give some advanced control solutions to illustrate both the concept and the application. All the proposed control schemes will be illustrated through real-time experimental results showing their performance and effectiveness on real-robots.


**Short Biography:** Ahmed CHEMORI received his M.Sc. and Ph.D. degrees, respectively in 2001 and 2005, both in automatic control from the Grenoble Institute of Technology in France. He has been a post-doctoral fellow with the automatic control laboratory of Grenoble in 2006. He is currently a tenured research scientist in Automatic control and Robotics at the Montpellier Laboratory of Computer Science, Robotics, and Microelectronics (LIRMM). His research interests include nonlinear, adaptive and predictive control and their applications in underwater vehicles, humanoid robots, exoskeletons, parallel robots, under-actuated mechanical systems and aerospace.

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