

## SEMINAR

# Nonlinear Adaptive Control of Small Tethered Autonomous Underwater Vehicles

November 18<sup>th</sup>, 2016 at 10:00 – Seminar Room, D2 Building**Ahmed CHEMORI**

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## Abstract of the talk

Underwater vehicles have gained a widespread interest in the last decades, from various research communities (design, actuation, perception, modelling, control, etc), given the multiple tasks they can accomplish. Indeed, their applications are multiple and various in different fields such as dams' inspection, oil and gas industry, fish farms, wind parks, hydroelectric power stations, underwater archeology, ocean cartography, air crash and environmental investigations, etc. Control of underwater vehicles is a thoroughly investigated subject but still an open research problem. Indeed, when we are interested in autonomous control of underwater vehicles (ROVs, AUVs, ASVs, bioinspired, etc) different control challenges may arise. They are mainly due to the inherent high nonlinearities and time varying behavior of their dynamics subject to hydrodynamic effects and environmental disturbances. The heart of this talk includes the study of control challenges of small tethered underwater vehicles and some proposed control solutions. Indeed, different control solutions, mainly issued from adaptive control, will be then presented and discussed. All the proposed controllers will be illustrated through real-time experiments on different underwater vehicles (AC-ROV, L2ROV, LIRMIA2 and U-CAT).

**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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