ICT PHD

Research project for a PhD curriculum in ICT –Industrial Applications of ICT

Tutor: Luigi Biagiotti

Co-Tutor: Paolo Falcone

(\*) Italian [Industrial] Co-tutor: Marianna Vivolo (Iveco Defense Vehicles)

(\*\*) Foreign Co-tutor:

Proposed Title of the research: Control algorithms for autonomous off-road navigation of heavy, multi-axle wheeled vehicles in varying- and high-slope environments (flat and rolling)

Keywords: (5) vehicle motion control, motion planning, autonomous driving, model-based control design, automatic control.

Research objectives: --(max 10 rows)

The main objective of this research project is to develop model-based motion planning and control algorithms for autonomous navigation of heavy, multi-axle wheeled vehicles in varying- and high-slope environments. The developed algorithms must enable robust and precise navigation in presence on highly uneven road surfaces and the operation on high-varying slope terrains that require the vehicle to operate at the limits of its physical capabilities. The project aims at demonstrating the developed control design framework in testing vehicles.

Proposed research activity -- (max 10 rows)

The candidate’s training and research activities are (tentatively) scheduled as follows:

* 6 months abroad,
* 6 months at IDV
* The rest of the time at Unimore.

Unimore will hosts the PhD student’s main research and training activities. During the stay at the company the candidate will refine his/her research hypotheses and validated his/her research results. Finally, the PhD student will engage in neighboring research activities during his/her visit abroad, when he/she will also build his/her own network.

Supporting research projects (and Department): Department of Engineering Enzo Ferrari

Possible connections with research groups, companies, universities.

Iveco Defense Vehciles.

(\*) optional

(\*\*) optional/to be completed on the second year