学术报告会

时　间：5月15日（周三）9:30-11:00

地　点：电院群楼2-406

End-to-End driving from vision by Deep-Learning on real human driving data and Deep Reinforcement-Learning in urban realistic simulator

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Abstract:

This seminar shall present ongoing research focusing on *end-to-end driving from vision*, conducted in the Center for Robotics of MINES ParisTech, in collaboration with Valeo company and within a PhD thesis. End-to-end driving consists in controlling the driving wheel and/or acceleration/braking by direct visual servoing on the video stream from a camera looking forward from the vehicle. The work we will present explores:

1/ *Imitation Learning*, in which the driving behavior is cloned from human driving by learning with a Deep Convolutional Network in a supervised fashion based on recordings of real driving by human drivers; the very good results have been published at IROS'2018, and showcased at CES'2018;

2/ *Deep Reinforcement Learning*, in which driving behavior is learnt from scratch in a realistic driving simulator (CARLA), with a state-of-the-art improved DQN applied with an adequate reward function prompting the vehicle to stay centered on its lane with a target speed, stop when a traffic light is red (and restart when it goes green), and avoid other vehicles; the preliminary results are very promising.

Biography:

Pr Fabien Moutarde is Full Professor at the Center for Robotics of MINES ParisTech (PSL Université Paris). He holds a Ph.D. in Physics (1991) and an engineer degree from the French Ecole Polytechnique (1987). He currently teaches, both in MINES ParisTech and in SPEIT/SJTU-ParisTechShanghai, in the fields of Machine-Learning, Computer Vision, Intelligent Vehicles and Robotics. His main research areas are applications of Deep Machine-Learning and Datamining for real-time intelligent computer vision, robotics, and Intelligent Transport Systems (ITS). He has in particular worked for on-board applications for self-driving cars and Advanced Driving Assistance Systems (ADAS), and on gestures/activity recognition techniques for collaborative robotics and Human-Machine interactions. Most of his research is conducted in collaboration with large companies such as Valeo, PSA/Peugeot-Citroën, and SoftBank Robotics Europe.