



Workshop Information Form

Workshop Title

New advances on autonomous vehicle

Workshop Manager

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Summary of the WorkShop and General Schedule

New challenges undeniably occur while building next-generation autonomous vehicles. New solutions and technologies are continuously developed and designed toward a truly autonomous vehicle, that is to say, a machine behaving like a human.

Five levels have been defined in the evolution of autonomous driving, each level describing the extent to which a car takes over tasks and responsibilities from its driver, and how the car and driver interact:

- 1 - **Driver assistance**: driver assistance systems support the driver, but do not take control;
- 2 - **Partly automated driving**: one driver assistance system of steering and acceleration/ deceleration is automated, but the driver remains responsible for operating the vehicle;
- 3 - **Highly automated driving**: under certain traffic or environmental conditions, the driver can disengage from the driving for extended periods of time;
- 4 - **Fully automated driving**: the vehicle drives independently most of the time to perform all safety-critical driving functions and monitor roadway conditions, the driver being able to drive;
- 5 - **Full automation**: the vehicle assumes all driving functions in every driving scenario, the people in the vehicle being only passengers.

The autonomous vehicle is a combination of sensors and actuators, sophisticated algorithms, and powerful processor systems that execute advanced software. Three parts emerge from the sensory system:

- **navigation and guidance** part that determines where you are, where you want to go, and how you get there;
- **driving and safety** that directs the vehicle, making sure that vehicle acts properly under all circumstances and follow the road legislation;
- **performance** that manages car's internal systems (power control and management, consumption and thermal dissipation)

Lots of challenges are still open such as road conditions, weather conditions, traffic conditions, accident liability, radar interference,...

