ROBOT PACA 2018
1ère rencontre Robotique dans la région PACA
25-26 juin, Sophia Antipolis

CHORALE

Collaborative and HeterOgeneous Robots interActing in Live Environement

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Created April 1st 2018
https://project.inria.fr/chorale/

Expertises

Leader : Philippe Martinet
Project assistant : Patricia Riveill

Members
Guillaume Allibert (MCF, I3S/Unice)
Philippe Martinet (DR, Inria)
Patrick Rives (DR, Inria)
Paolo Salaris (CR, Inria)

Application fields
- Transport of people and goods
- Surveillance, Monitoring , Exploration
- Assistance and Service in a Human Environment
- Smart Cities

Modeling
- *Robots*
- *Sensors*
- *Environment (Multi-level Mapping)*

Perception
- *SLAM, Visual Odometry*
- *Data fusion*
- *Localization*
- *Active Sensing*
- *Deep Learning*

Control
- *Sensor Based Control*
- *Model Predictive Control*
- *Motion Planning*
- *Perception Action Coupling*

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Applications

Connected Autonomous Vehicles

 Autonomous Navigation (Mapping, Localization, Control, Maneuver)
 Safe Driving (Context aware navigation, Safety assessment)
 Platooning (Collaborative Modelling, Control, Localization)
 Deep Learning
 Heterogeneous Navigation (Replication)
 Multi-Robotic System
 AGV-UAV coordination

Collaborative and Distributed robotics

 Robots application in cluttered environment
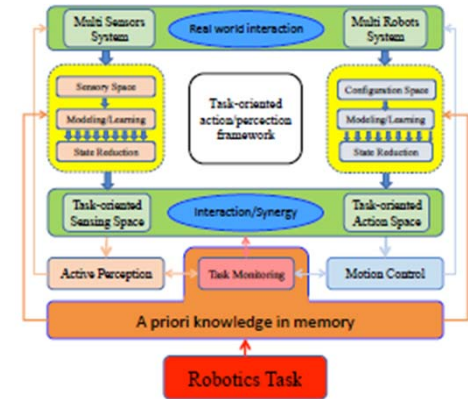 Shared tasks between robots and human

Smart Cities

 Sensor networks
 Optimal sensor locations

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Research Axis

Long-term knowledge in memory for better (inter)-acting in live environment

- Multi-layer representation of the environment and scene understanding
- Hybrid model-based/machine learning task representation
- Long-term Mapping and Scene Understanding

Multi-sensory based perception and control for heterogeneous robotic systems

- Synergy-based sensorimotor control for heterogeneous robotic systems
- Online perception-aware control and trajectory generation
- Proactive social navigation among human in live environment
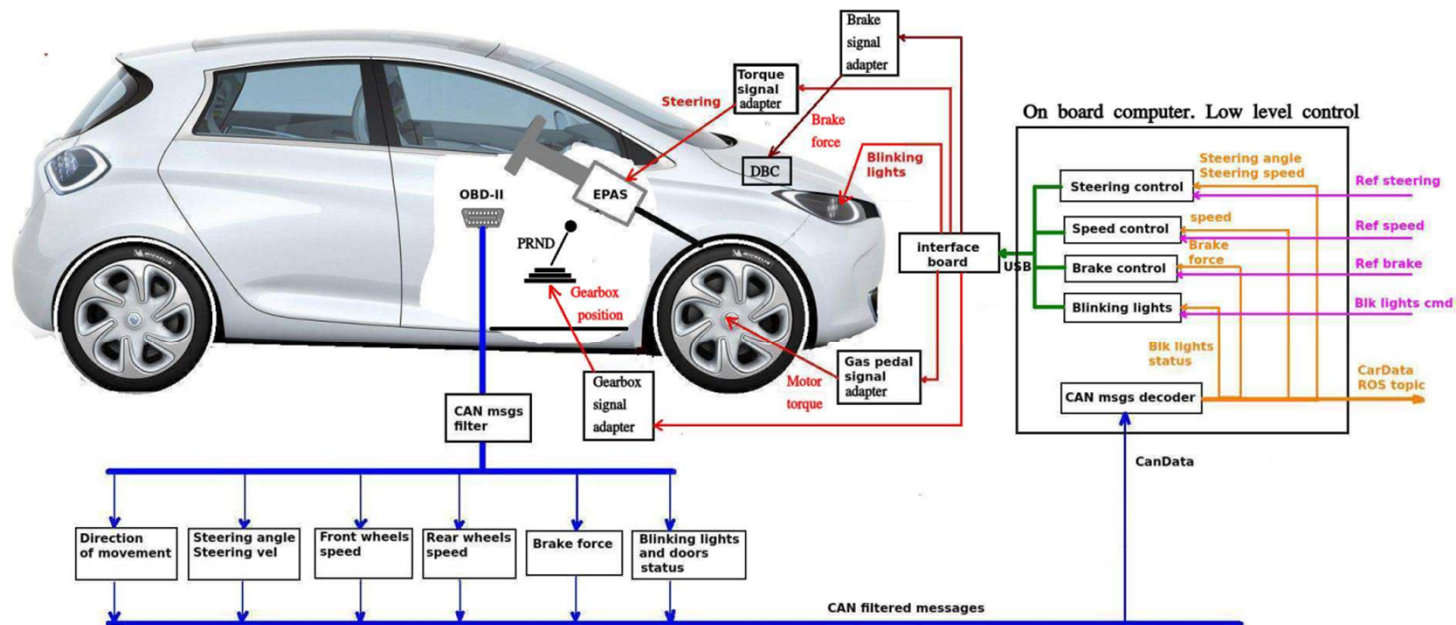
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3D Vision - Mobile and Flying robots

Mobilité, Véhicule Autonome et Connecté et Smart Cities
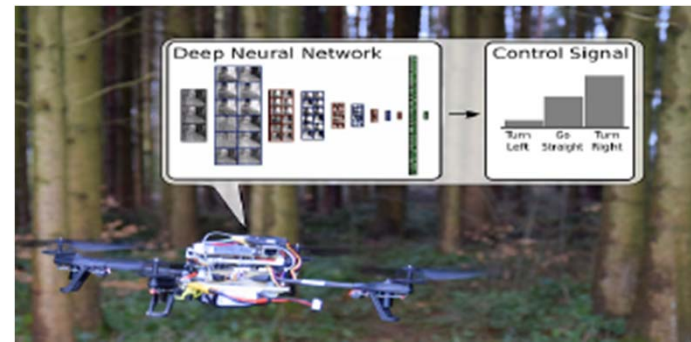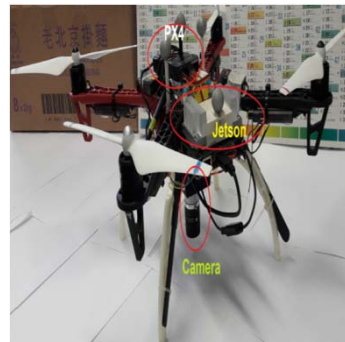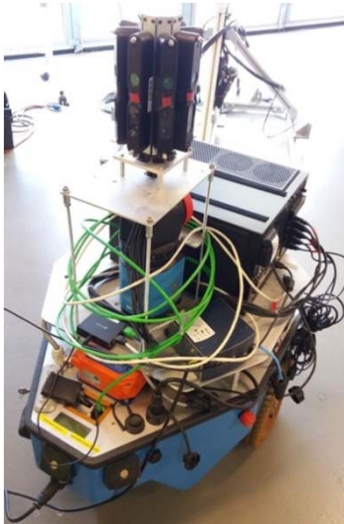
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ICAV Platform

RTK GPS   Front and rear cameras
Low cost GPS   360° sensor view
IMU   Velodyne VLP16 and HDL-32^{E}
Front LIDAR   NVIDIA