iQMatic- FFI resultatkonferens
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iQMatic (2013-2017)

Project Summary

- Autonomous driving on closed-off areas with two trucks
- Command centre based monitoring and dispatching
- Very close integration between industri and academia
Research plattform architecture

Sensors
- Radar
- Visio
- Lidar
- IMU
- GPS

pre-processing

Environment fusion
- SMOT Object tracker
- OMAP Occupancy map
- RALF 2 Road estimation
- VEGO Localization

Powertrain and steering
- LONC Long. controller
- LATC Lat. controller
- BODY Vehicle body controller

OC / Logistics / Dispatch

Situation Awareness

Action Selection

Motion Planner

Map

Trajectory follower

MPCC MPC motion executor

Lidar
- Sensors

Object tracker
- Sensors

Road estimation
- Sensors

Research plattform architecture
SAFE – the Control Centre
Motion planning

- Lattice-based planner (for off road)
- Planning algorithms based on graph search
- Apt at solving complex pose-to-pose maneuvers
Autonomous vehicle driving
Localization
Much work left to do...

Many open research problems:

• Prediction of movements and intention of other traffic participants
• Robust, redundant systems
• Methods for test and validation according to standards (ISO/IEC)
• Interaction between humans and autonomous vehicles
• many more!
Summary

• Very tight collaboration between academia and industri:
  • 3 successful Ph.D. defenses, now working within the discipline
  • iQMatic has triggered large-scale development of autonomous transport solutions at Scania
  • Very high interest from industri, academia and society for demonstrations.
• iQMatic has inspired several new projects:
  • Reversing with trailer project
  • iQPilot – Autonomous busses
• Research platform reused by several students from the WASP-program.
Questions?