The VisLab Intercontinental Autonomous Challenge

Riding on a driverless vehicle from Italy to China

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Driver still wanted!

LKAS & ACC:

- Only 80% of the steering force required
- Complement, not replace the driver
- Driver in control at all times
VisLab’s BRAiVE vehicle
BRAiVE’s capabilities

- LDW – ACC - LKA
- Vehicle Detection
- Parking Spot Det.
- Pedestrian Det.
- Traffic Sign Recognition
- Blind Spot Monitor
- Short Range OD
- Medium Range OD
- High Beam Assist
- Obst & Lane Det.
Rome Test

It works, but how reliable is this technology?
VIAC - The VisLab Intercontinental Autonomous Challenge

13,000 km, 3 months trip, ...no one driving
The Challenge

- Test for 13,000 km in:
  - uncontrolled environments and
  - for a long time

- Including two very different continents (geographical morphology, traffic, weather, infrastructures)

... with small, electric, and driverless vehicles
Assumptions

- No assumption can be made on:
  - Road infrastructures
  - Correct behavior of other road participants
  - Availability of maps and GPS coverage

- No chance to test the route in advance

- Be prepared for anything!
Leader-follower approach

When the leader is visible...

Coarse route definition (via leader position)

Route refinement (via local sensing)
Leader-follower approach

When the leader is not visible...

Coarse route definition (via GPS waypoints)

Route refinement (via local sensing)
The Sensing Suite

- 7 cameras
- 4 laserscanners
- GPS
- V2V radio

+ Additional devices
Data recording

- All data were logged during the whole event, providing a unique data set
- About 50 Terabytes
- Data sharing
The Expedition

Autonomous vehicles:
- 2 vehicles travelling
- 2 vehicles as special backups
The Expedition

Autonomous vehicles:
- 2 vehicles travelling
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Support (provided by Overland Network):
- 3 trucks (mechanic shop, storage,...)
- 4 RVs for overnight accommodation
Lessons learned

- Back to manual in some situations
  - Really bad weather
  - Too weak information available
  - Very heavy and chaotic traffic
    Adapt driving behavior to local traffic patterns!
The Trip
July 26, 2010 – October 28, 2010

“All journeys have secret destinations of which the traveler is unaware”

Martin Buber
ВОДИТЕЛЬ, ВНИМАНИЕ!
ВКЛЮЧИ БЛИЖНИЙ СВЕТ ФАР!