Traffic Awareness Driver Assistance based on Stereovision, Eye-tracking, and Head-Up Display

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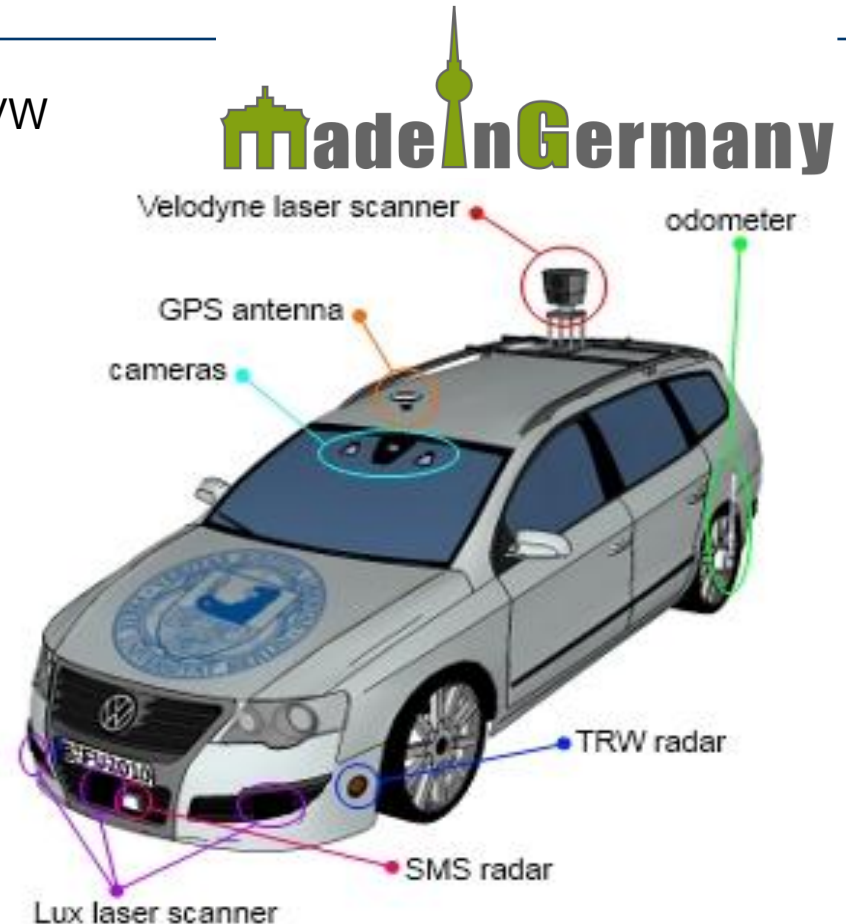
Freie Universität Berlin

Outline

- we present a system which monitors traffic and the driver's attention to support driver awareness

- if the driver misses gazing at other vehicles or red traffic light, the system gives different warnings

- stereo camera, eye-tracker, head localization, HMI, acoustic warning

System Description
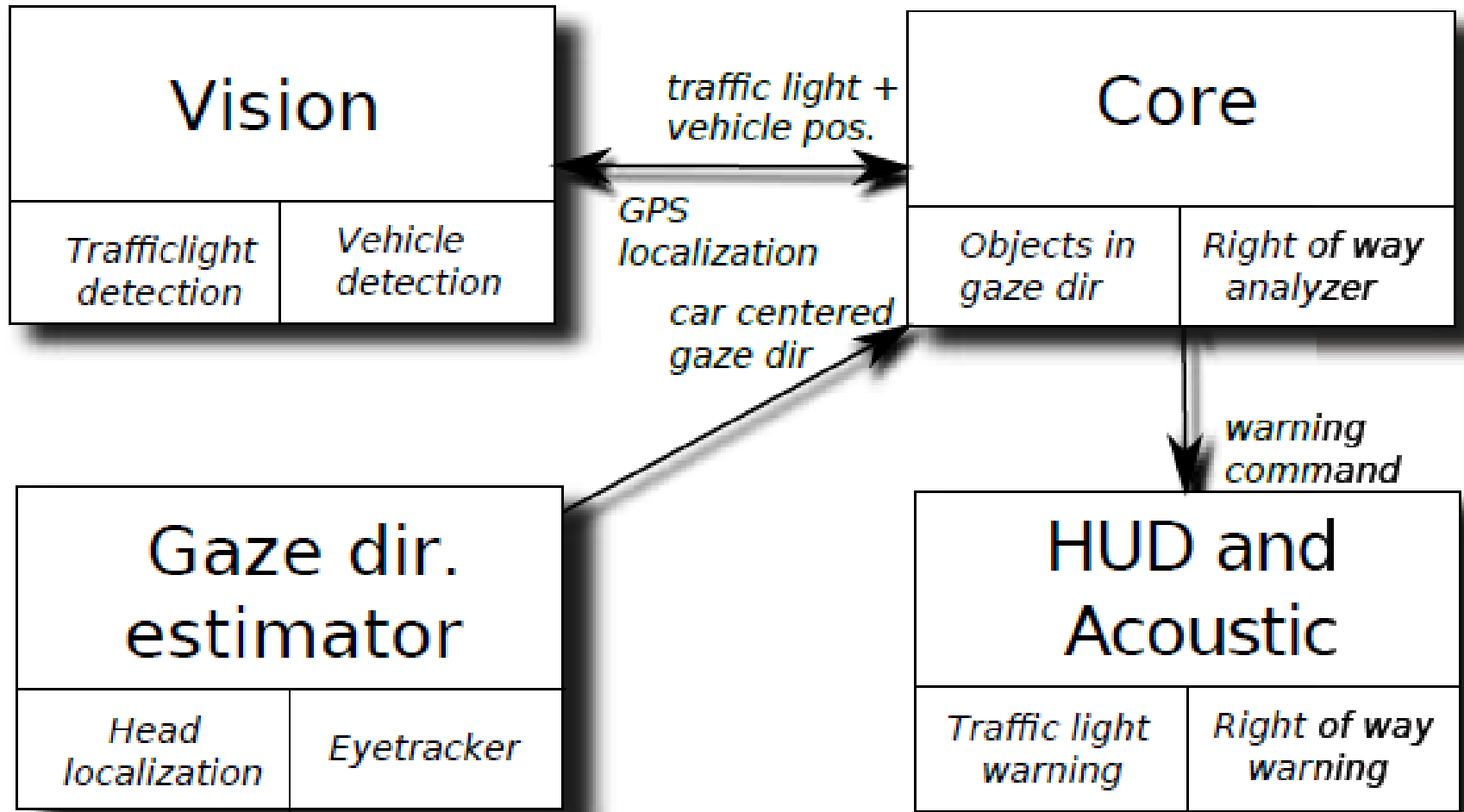
Test Platform

- Vehicle: VW Passat Variant, modified by VW
- Integration of sensor systems,
- Drive- and Steer-by-Wire, CAN
- Positioning system: Applanix POS LV 510
  - IMU, odometer, correction data via UMTS
- Camera systems:
  - 2 INKA Cameras (HellaAglaia)
  - Continental Lane Detection
- Laser scanner:
  - IBEO Lux 6-Fusion System
  - 3D Laser scanner: Velodyne HDL 64 E
- Radar systems:
  - 2 short range (BSD 24 GHz)
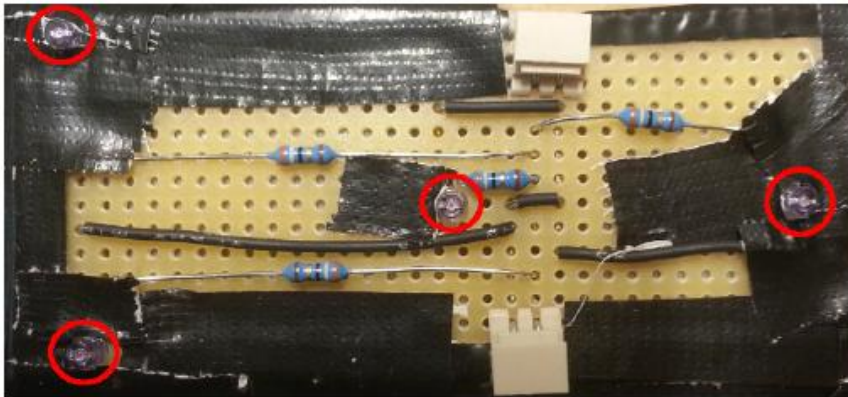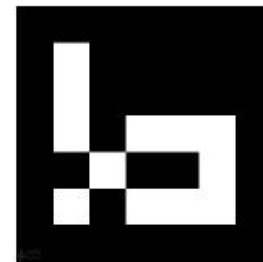 - 4 long range (ACC 77 GHz)
  - 1 SMS (24 GHz)

MadeInGermany

Velodyne laser scanner
odometer
GPS antenna
cameras
TRW radar
SMS radar
Lux laser scanner

Stereo Camera

- developed at Freie Universität Berlin

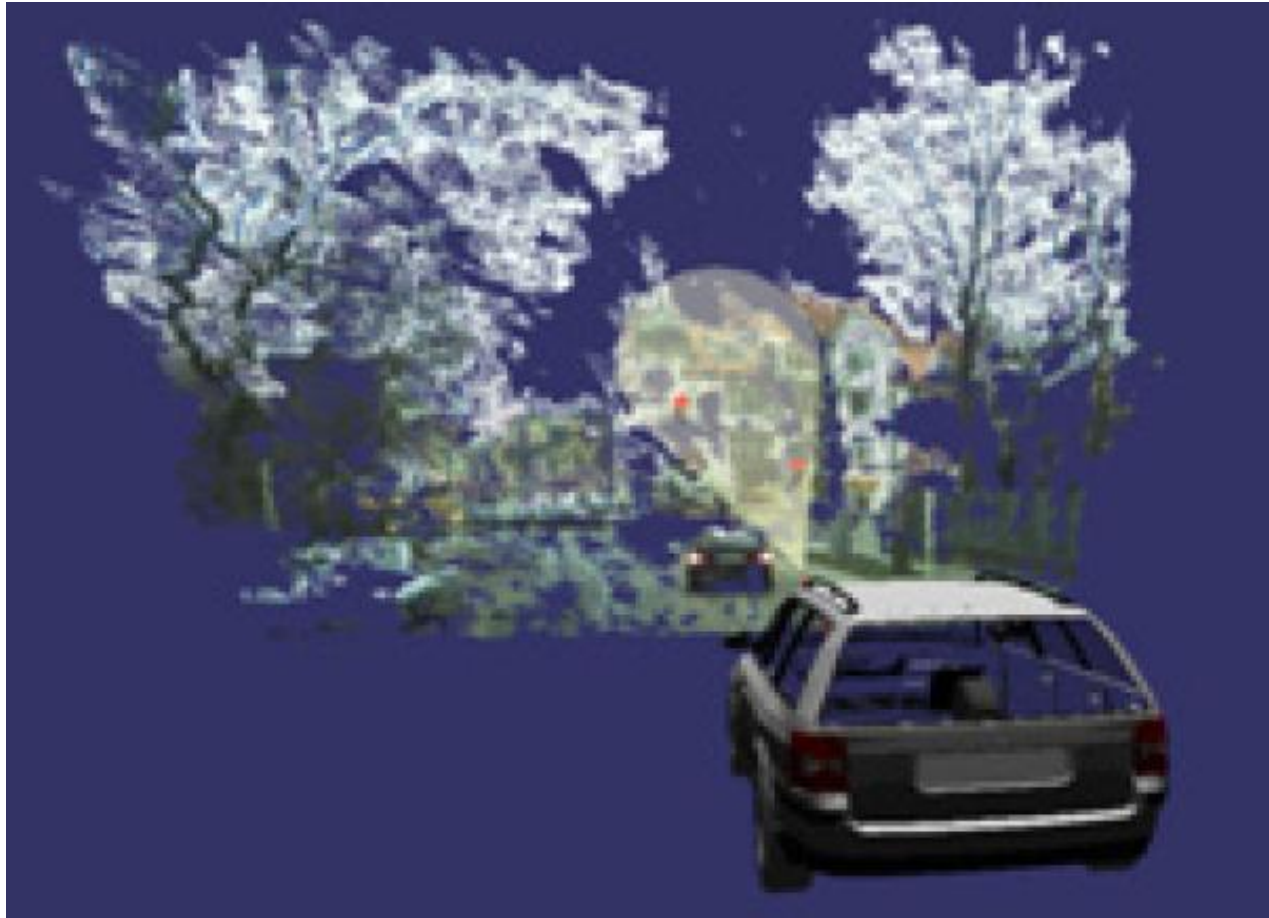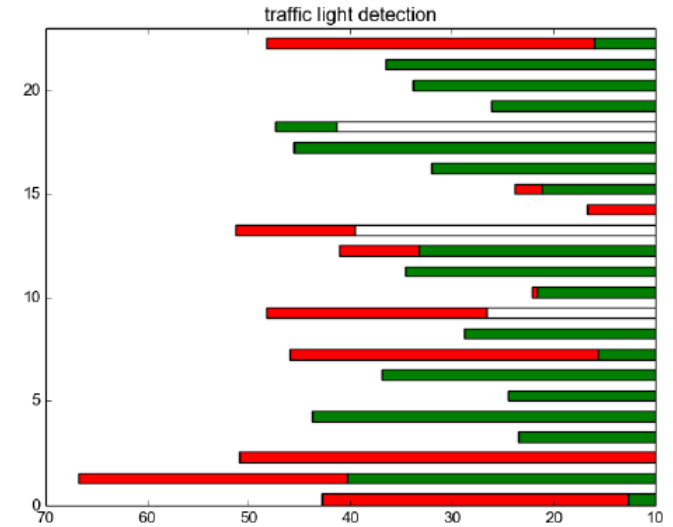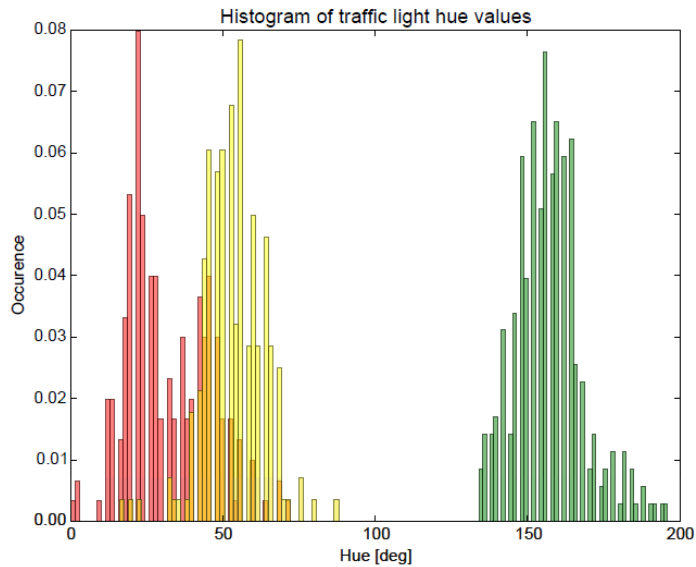- uses FPGA and synchronized images to generate disparity map

Daniel Göhring
18 May 2016

Dahlem Center for Machine Learning
and Robotics (DCMLR)
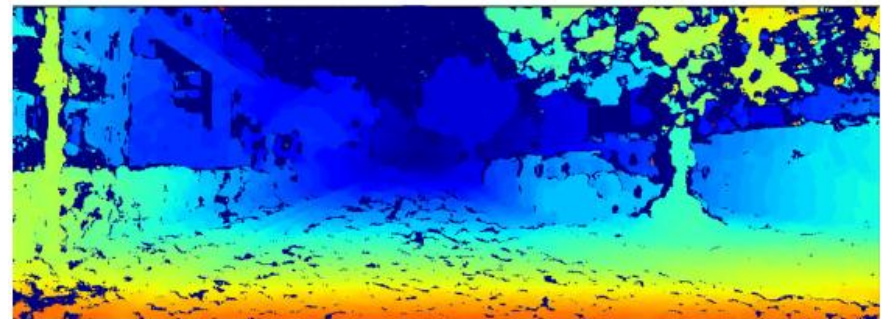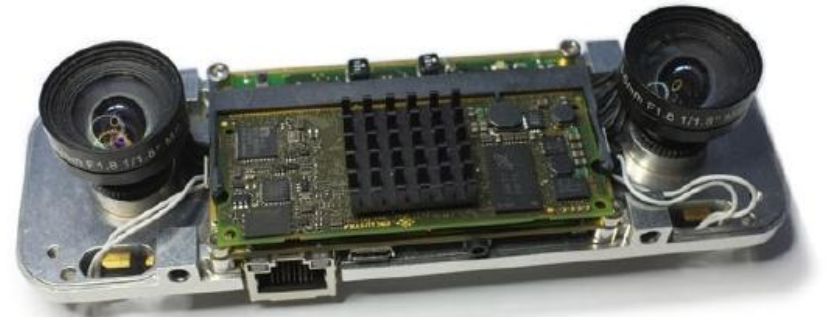
Gaze Localization

Head-Up Display

System at Work

Gaze Direction

Experimental Results

Histogram of traffic light hue values

traffic light detection

For further discussion, please come to poster 3.9 at interactive session 2:50 p.m. (WeIn-CaP3)