

V-CHARGE

Project Overview

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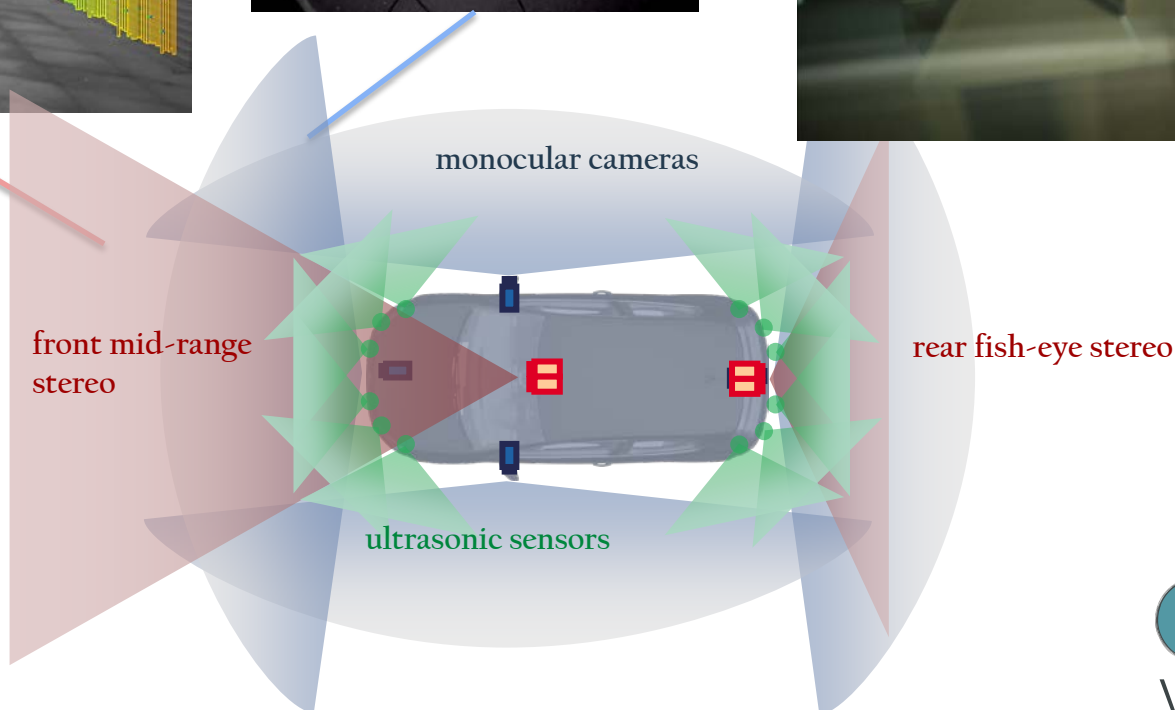
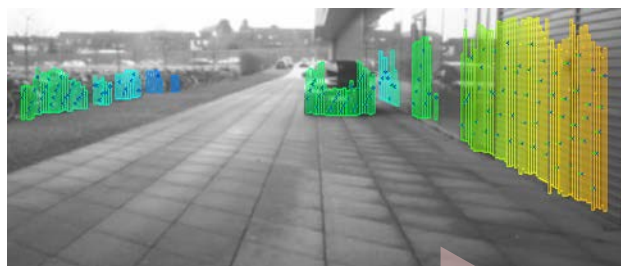
Project Goals

- Automated valet parking and charging
 - no time-consuming search for parking spots any more
 - driverless valet service
 - no human intervention
- Fully automated driving
 - in mixed-traffic scenarios
 - in indoor and outdoor parking lots and parking garages without GPS



Project Goals

Close-to-series sensors only for early market adoption



The V-Charge Consortium

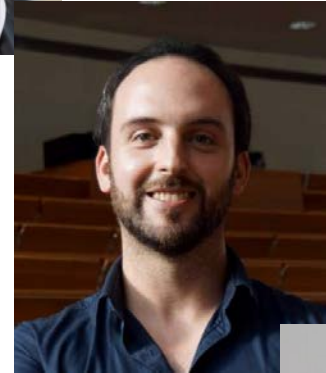
- Coordinator

- Roland Siegwart
- rsiegwart@ethz.ch



- Scientific Coordinator

- Ulrich Schwesinger
- ulrich.schwesinger@mavt.ethz.ch



- Project Manager

- Regina Notz
- regina.notz@sl.ethz.ch



The V-Charge Consortium

- ETH Zürich,
Autonomous Systems Lab
 - Project leadership
 - Visual localization
 - Motion planning & vehicle control

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- Volkswagen AG
 - Vehicle platform equipment
 - Safety & monitoring modules
 - Static environment perception & object tracking
 - Automated parking functionality
- TU Braunschweig
 - Parking lot management
 - V2I communication architecture

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The V-Charge Consortium

- Robert Bosch GmbH



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- Sensor technology

- Università degli Studi di Parma



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- Object detection and classification

- University of Oxford



- Semantic mapping concepts

- ETH Zurich,
Computer Vision and Geometry Lab

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- Camera calibration
- Structure from motion
- Dense environment reconstruction



V-CHARGE

Story Outline

- Customer story
 - A commuter realizes he is late for an appointment. But, because of V-Charge, he can just pull up to his work place's front door with his vehicle and run in. Easy.
- Technology showcase
 - No need for a closed off area. The V-Charge vehicles handle pedestrians and other human-operated cars.
 - Environment perception using cameras and ultrasonic sensors only.
 - Efficient use of charging infrastructure.
 - Minimal infrastructure requirements on parking lot side.



Showcasing: Vehicle Drop-off

- Convenient drop-off via smartphone app
- The parking lot server guides the V-Charge car to a vacant parking spot



Showcasing: Mixed-Traffic Navigation

- On its way to the parking spot, the V-Charge car will react to other human-operated vehicles and pedestrians in mixed-traffic scenarios



Showcasing: Automated Parking

- Once the vehicle is close to its assigned parking spot, it uses its local sensors to detect the occupancy state of the parking spot.
- If the parking spot is free, a fully automated parking maneuver is performed.



Showcasing: Charging Concept

- The vehicle is able to precisely position itself above an inductive charging plate.
- After charging completed, the vehicle can be sent back to the parking area to make room for other vehicles



Showcasing: Vehicle Pick-up

- Easy pick-up via smartphone
- The car awaits the traveler at the pick-up station
- The traveler enters the car and drives away.

