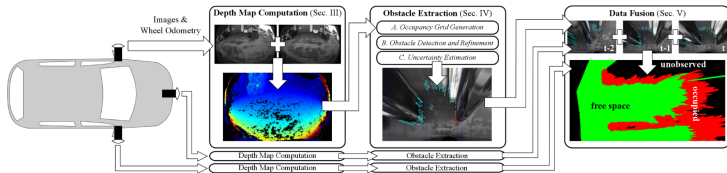# Obstacle Detection for Self-Driving Cars
Using Only Monocular Cameras and Wheel Odometry
C. Hane, T. Sattler, and M. Pollefeys (IROS 2015)

- Extracting static obstacles from depth maps computed from monocular fisheye cameras parked cars and signposts, the amount of free space, distance between obstacles, the size of an empty parking spot
- Motivation: Affordable, reliable, accurate, and real-time detection of obstacles
- Two approaches: Active methods using sensors such as laser scanners, time-of-flight, structured light or ultrasound and passive methods using camera images
- No need for accurate visual inertial odometry estimation, only available wheel odometry
- Steps:
  - Depth estimation for each camera using multi-view stereo matching
  - Obstacle detection in 2D
  - Fusing the obstacle detections over several camera frames to handle uncertainty
- Accurate enough for navigation purposes of self-driving cars