Lost and Found: Detecting Small Road Hazards for Self-Driving Vehicles P. Pinggera, S. Ramos, S. Gehrig, U. Franke, C. Rother and R. Mester (IROS 2016)



Left stereo input image



Ground truth annotation



Detection results of the FPHT-CStix method, color-coded by distance





- Reliable detection of small obstacles from a moving vehicle using stereo vision
- Statistical planar hypothesis tests in disparity space directly on stereo image data, assessing free-space and obstacle hypotheses
- Introduce midlevel obstacle representation Cluster-Stixels based on the original point-based output
- Does not depend on a global road model and handles static and moving obstacles
- Evaluation on a novel lost-cargo image sequence dataset comprising more than two thousand frames with pixel-wise annotations
- Comparison to several stereo-based baseline methods and runs at 20Hz on 2 mega-pixel stereo imagery
- Small obstalces down to the height of 5 cm can successfully be detected at 20 m