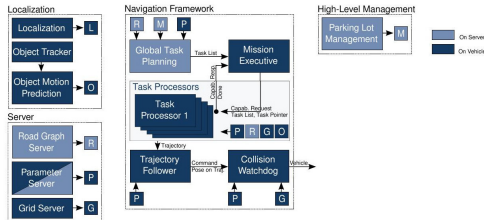


Toward Automated Driving in Cities using Close-to-Market Sensors

P. Furgale, U. Schwesinger, M. Rufli, W. Derendarz, H. Grimmer, P. Muhlfellner, S. Wonneberger, B. Li, B. Schmidt, T. N. Nguyen, E. Cardarelli, S. Cattani, S. Bruning, S. Horstmann, M. Stellmacher, S. Rottmann, H. Mielenz, K. Koser, J. Timpner, M. Beermann, C. Hane, L. Heng, G. H. Lee, F. Fraundorfer, R. Iser, R. Triebel, I. Posner, P. Newman, L. Wolf,

M. Pollefeys, S. Brosig, J. Effertz, C. Pradalier and R. Siegwart (IV 2013)



- ▶ Electric automated car outfitted with close-to-market sensors
- ▶ Fully operational system including automated navigation and parking
- ▶ Dense map obtained from motion stereo and a volumetric grid
- ▶ Sparse map is built from state-of-the-art SLAM
- ▶ Road network represented by RoadGraph, a directed graph of connected lanes, parking lots and other semantic annotations
- ▶ Localization by extensive data association between sparse map and observed frame
- ▶ Situational awareness with a robust and accurate scene reconstruction using dense stereo, object detection and tracking, and map fusion
- ▶ Path planning and motion control with a hierarchical approach consisting of a mission planer, specific processors for onlane driving and parking maneuvers and a motion control module