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QUALITY ASSESSMENT OF LANDMARK BASED POSITIONING USING STEREO CAMERAS

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Abstract. Driving autonomously requires highly accurate positioning. Therefore, alternative positioning systems to GPS are required especially to increase the accuracy, and to have a complementary data source in areas where GPS is not available. As more and more on-board sensors are used for safety reasons, information gathered about their environment can be used for positioning based on relative measurements to landmarks along the road. This paper investigates the accuracy potential of positioning using a stereo camera system and landmark maps. Therefore, we simulated several stereo camera systems with variable opening angle and base length to compute the positioning accuracy in a test area. In the first step, localization was calculated based on single positions, in the second step we used a Kalman filter additionally. While positioning in the first case was not successful along the entire trajectory, the Kalman filter led to far better results.

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