Dokumenttyp: Zeitschriftenaufsatz

Autor(en) des Beitrags: Stahl, Tim; Wischnewski, Alexander; Betz, Johannes; Lienkamp, Markus

Titel des Beitrags: ROS-based localization of a race vehicle at high-speed using LIDAR

Abstract: An approach for LIDAR-based localization at high speeds is presented. In the proposed framework, the laser pose estimation is treated as a parallel redundant information, which is fused in an adjacent Kalman filter. The measurement and motion update step of the ROS-based adaptive Monte Carlo localization package is modified, in order to meet the requirements of a high-speed race scenario. Thereby, the key focus is on computational efficiency and the adaptation to characteristics arising at high speeds and at the limits of handling. An introspective performance evaluation monitors the position estimation process and labels generated outputs for adjacent components accordingly. The effectiveness of the proposed algorithm is illustrated in a real world high-speed experiment, autonomously driving a race vehicle—the DevBot—in a typical race environment.

Stichworte: FTM Fahrodynamik

Zeitschriftentitel: E3S Web of Conferences

Jahr: 2019

Band: 95

Seiten: 04002