

Smartphone Based HD Map Building for Autonomous Vehicles

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Abstract – The development of autonomous vehicles requires accurate map information, about the surrounding static landmarks such as lane information. Building up the so called HD Map requires robust sensors, that mainly means special hardware requirements. Thus research in this topic starts with question of availability of an HD Map. This paper describes a method of creating a robust HD Map on highways, including accurate lane information based on a simple smartphone. The sensor data of the phone are filtered by a Kalman-filter. Hence the localization is more accurate during the offline building process and the online recall of lane information as well. Thus based on this lane information, an accurate and robust trajectory can be planned for the autonomous vehicles.

Keywords—HD Map, Autonomous vehicles, Lane model, Kalman filter, Dead-reckoning