

# A U S H A N G

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## FREIE UNIVERSITÄT BERLIN Fachbereich Mathematik und Informatik

Promotionsbüro, Arnimallee 14, 14195 Berlin

### DISPUTATION

**Dienstag, 11. April 2017, 08.00 Uhr**

**Ort: Raum 005, Takustraße 9, 14195 Berlin**

**Disputation über die Doktorarbeit von**

**Herrn Xiuyan Guo**

**Thema der Dissertation:**

**Feature-based Localization Methods for Autonomous Vehicles**

**Thema der Disputation:**

**Feature-based Localization for Autonomous Vehicles  
in Urban Scenarios**

Die Arbeit wurde unter der Betreuung von **Prof. Dr. R. Rojas** durchgeführt.

Abstract: Autonomous vehicles are virtually considered as the panaceas for the future of road transport due to numerous promising benefits. So they have attracted wide research interest from both academia and industry. And accurate localization is the prerequisite capability for autonomous vehicles, especially in urban environments. Thus, this talk will present a feature-based localization method for autonomous vehicle in urban scenarios. First, two mapping methods will be introduced. Then, the localization method which is under the frame of the EKF will be presented. The main localization method is based on the two-point matching algorithm. To obtain smooth trajectory, two trajectory smoothing methods will be introduced. After that, the proposed method is evaluated through two datasets in terms of accuracy and precision. Besides, the performance of the real on-road tests will be shown as well. Finally, the existence issues of this work and the possible improvement for future work will be pointed out.

Die Disputation besteht aus dem o. g. Vortrag, danach der Vorstellung der Dissertation einschließlich jeweils anschließenden Aussprachen.

**Interessierte werden hiermit herzlich eingeladen**

Der Vorsitzende der Promotionskommission  
Prof. Dr. R. Rojas