

# A U S H A N G

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## FREIE UNIVERSITÄT BERLIN Fachbereich Mathematik und Informatik

Promotionsbüro, Arnimallee 14, 14195 Berlin

## DISPUTATION

**Mittwoch, 23. März 2016, 12.15 Uhr**

**Ort: SR031, Arnimallee 7, 14195 Berlin**

**Disputation über die Doktorarbeit von**

**Herrn Robert Spangenberg**

**Thema der Dissertation:**

**Landmark-based Localization for Autonomous Vehicles**

**Thema der Disputation:**

**Landmark-based Localization for Autonomous Vehicles  
in Urban Environments**

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

**Abstract:** Localization is a key capability for autonomous vehicles especially in urban scenarios. We will discuss the necessary building blocks landmark detection, mapping and localization of the chosen approach. The localization is performed in real-time by a stereo camera system as a main sensor, using vehicle odometry and an off-the-shelf GPS as secondary information sources. The primary landmark class of pole-like structures is presented as well, considering the sensor setup.

Localization is performed by a particle filter approach, coupled with an Kalman filter for robustness and sensor fusion. The talk closes with the evaluation methods chosen and results of real autonomous test drives in several urban scenarios. A lateral accuracy below 20 cm could be reached.

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