

## FREIE UNIVERSITÄT BERLIN Fachbereich Mathematik und Informatik

Promotionsbüro, Arnimallee 14, 14195 Berlin

# DISPUTATION

**Donnerstag, 6. Juni 2013, 10.15 Uhr**

**Ort: FB Mathematik und Informatik,  
Takustrasse 9, 14195 Berlin, Seminarraum 053, EG**

**Disputation über die Doktorarbeit von**

**Herrn Dipl.-Inf. Patrick Paul Neumann**

**Thema der Dissertation:**

**Gas Source Localization and Gas Distribution Mapping  
with a Micro-Drone**

**Thema der Disputation:**

**Mobile Robot Olfaction**

Die Arbeit wurde unter der Betreuung von **Prof. Dr.-Ing. J. Schiller** durchgeführt.

Abstract: Mobile Robot Olfaction (MRO) is a relatively young discipline that studies mobile robots with gas sensing capabilities. The main tasks addressed by MRO are the search and tracking of odor/gas plumes and the localization of their source, gas distribution modeling/mapping, and the tracing of volatile chemical trails. The use of mobile robots with gas sensing capabilities is particularly evident when chemically related tasks have to be addressed, e.g., environmental monitoring including the detection of leakages on geodynamically active regions, landfill sites, and carbon capture and storage (CCS) areas. Additionally, these gassensitive mobile robots can be useful for applications that are currently carried out by trained animals (e.g., sniffer dogs and rats) and their handlers. Some of those applications consist in finding odor sources, e.g., the detection of drugs or explosives, finding buried landmines, or finding victims in search and rescue operations. The talk will give a general introduction to MRO including biological and artificial olfaction. Furthermore, a selection of state-of-the-art olfactory navigation algorithms will be discussed.

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.-Ing. J. Schiller