

EINLADUNG

- Zeit: Mittwoch, 23. Dezember 2009, 10.15 Uhr
- Ort: Raum 5052, Ahornstr. 55
- Referent: Dipl.-Inform. Laurent Calmes
- Thema: **Biologically Inspired Directional Hearing and Sound Source Tracking for Mobile Robots**

Abstract Mobile robots have undergone quite an evolution since the first experiments in the late 60s / early 70s. Robot navigation in particular is in a very advanced state. Where 'Shakey' had to ponder every action for minutes in a known environment 40 years ago, modern robots are able to successfully map and navigate unknown indoor and outdoor environments at high speeds while performing realtime collision avoidance.

One area needing improvement is speech controlling the machines. Although modern speech recognition systems can be used successfully in service robotics applications, they still have one major drawback: they require audio signals with high signal-to-noise ratios (SNR). In practice, this means that the microphone has to be very near to the speaker's mouth. This can be awkward, especially if several people have to interact with the robot. Having the microphone on the machine would be much more elegant, but this usually entails low SNR, especially if the speaker is at a distance.

This problem can be alleviated by providing a robot with the ability to locate sound sources in its environment, i.e., directional hearing. With this knowledge, it can use directional filtering or approach the speaker in order to improve SNR. Furthermore, a robot needs to have the ability to correctly associate past sound sources with current sound sources, i.e. it has to track the positions of the sources over time.

We will present the results of our work in the area of biologically inspired sound source localization and tracking sound sources using Markov Chain Monte Carlo data association.

Es laden ein: Die Dozenten der Informatik