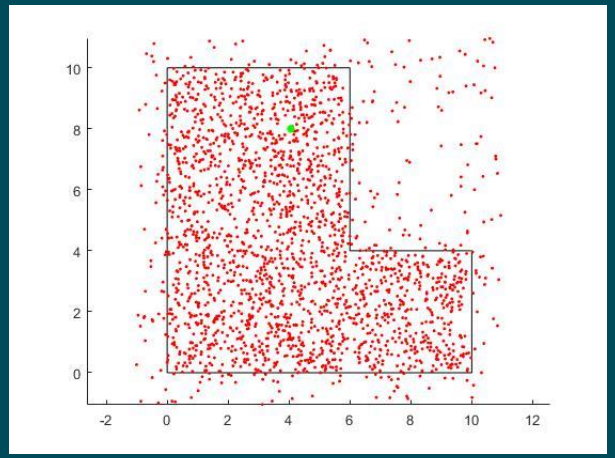
UNIVERSITÄT ZU LÜBECK
INSTITUT FÜR ROBOTIK
UND KOGNITIVE SYSTEME

Institute for Robotics and Cognitive Systems

Bachelor's / Master's Thesis

Localization for mobile robots with limited sensing

Low cost robots, such as vacuum cleaners or lawn mowers employ simplistic and often random navigation policies. Although a large number of sophisticated localization and planning approaches exist, they require additional sensors like LIDARs, cameras or time of flight sensors. At the Institute for Robotics and Cognitive Systems we develop smart localization algorithms for robots with only limited sensing abilities. Such localization strategies mostly rely on odometry data and binary sensor data, e.g bumper sensors. It is crucial for a successful localization algorithm to fuse the available data in order to generate an optimal position estimate using for example Particle Filter.



Tasks

You will develop ideas for localization of mobile robots with only limited sensing capability and evaluate them in simulations based on real data. The most promising solution should then be implemented prototypically and its functionality demonstrated.

Qualification

- Mathematical skills and the willingness to work in a team
- Interest in Filter techniques, such as Kalman Filter or Particle Filter
- Programming skills (Matlab, basic C++)

Interested? Contact M. Sc. Nils Rottmann at rottmann@rob.uni-luebeck.de!