

Coordination and mapping between mobile robots

Prerequisites:	- Basic knowledge of wireless communication protocols - Basic knowledge in C programming
Level:	This topic is appropriate for Master Students
Language:	German or English

INTRODUCTION

Mobile robots are well suited to explore unknown terrains without putting human lives at risk, e.g. after a disaster. When multiple robots are deployed, they have to exchange information in order to coordinate between each other and share results from mapping, measurement of environmental parameters, photos etc. to form one “big picture”.

PROJECT DESCRIPTION

The objective of this work is to design the coordination and data exchange between the robots. In particular, joint mapping is needed to avoid that the same area is explored multiple times; furthermore, the mapping work should be equally distributed to all robots in order to map the environment as quickly as possible. Therefore, in a first step, mapping algorithms for a single robot need to be investigated and implemented on an existing hardware platform. After that, the algorithm should be extended to be distributed among multiple robots, which also includes considerations which kind of information should be exchanged between them.

This project can be arranged as a student’s project or Master thesis.

WORK PACKAGES

- Study existing literature about single-node and distributed mapping algorithms.
- Adapt and implement the algorithm(s) on the existing robot hardware platform.
- Design and run experiments with the implemented algorithms.
- Evaluate the test results.
- Documentation and presentation of the work.

CONTACT

If you are interested in this work, please contact us via mail: projects@comnets.uni-bremen.de