

Description of master thesis

Robotic transportation

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In hospitals a significant amount of resources is spent on transportation of goods, e.g. blood samples, medicine, food, and trash. Usually these transportation tasks are carried out by humans. A current research project involving DTU Informatics, DTU Management, Force Technology, and Bispebjerg Hospital aims to reduce the required man power by letting these transportation tasks be carried out by a group of mobile robots. It is a complex problem involving a wide range of subjects: automation, robot vision, obstacle avoidance, localization, mapping, path finding, routing, planning, scheduling, multi-agent systems, and more.

The current master thesis concerns the development of a routing subsystem. This system should be able to find optimal routes for the individual robots as well as carrying out the overall planning and scheduling of the transportation tasks among the robots. The system should take into account aspects concerning traffic load, blocked paths, malfunctioning robots, prioritisation of tasks, etc. The development of the system should be based on a prior analysis of the various ways to split the workload between user and robot (e.g. how autonomous should the robots be?).

The developed routing subsystem is to be integrated into the existing localisation and mapping system for the mobile robots.