# nLink

Advanced mobile robotics

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# Master thesis

## A simulated environment for mobile robots

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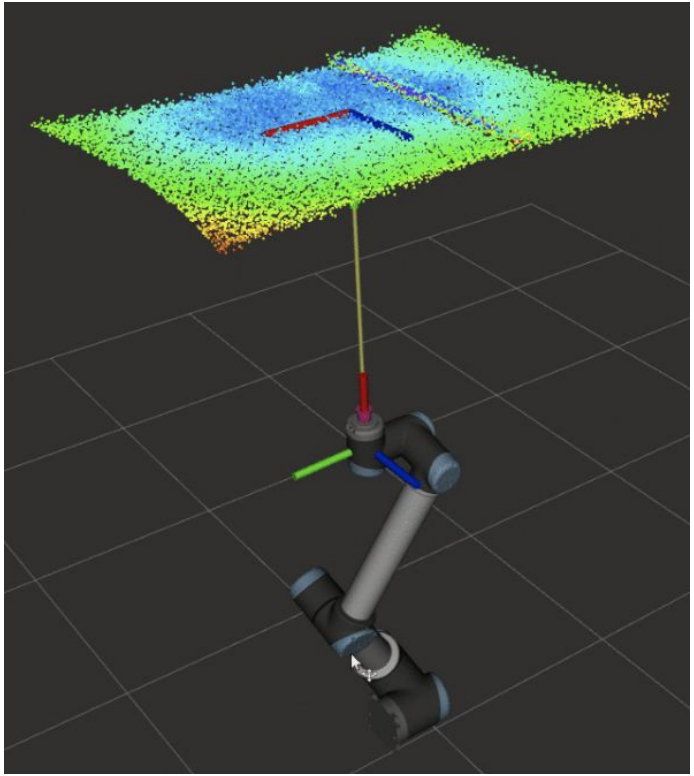
Testing mobile robots out in the real world is expensive and time consuming. Robots needs to be tested in a wide range of environments and under different conditions to make sure that the control algorithms behaves as expected. It is not feasible to construct every condition in a lab environment.
A simulation environment that generates sensor data used to challenge the control algorithms would greatly reduce the cost of field testing.

Gazebo is a simulation framework that can be connected to ROS to provide data from a simulation. A digital sibling of the mobile robot can be built along with multiple environments to test this machine. The simulation should be able to accept input from the user to manipulate the conditions and produce sensor data for the ROS to use in its control software.



# Master thesis

## Modelling and trajectory planning of robot with cable assembly in ROS

**Modelling and trajectory planning of robot with cable assembly in ROS**

ROS/Moveit! has many good trajectory planning algorithms, able to calculate trajectories based on physical and user defined constraints. One recurring topic is constraints due to cable assemblies mounted along the robot arm. Cables may flex, stretch and twist, applying forces to the arm and constraining movement.

The goal would be a solution that is able to utilize ROS' trajectory planning capabilities. taking a model of the cable assembly into account. The execution of planned trajectories would become more robust, and enable the robot to move into poses closer to the physical constraints (as non model based constraints often need to be very conservative).