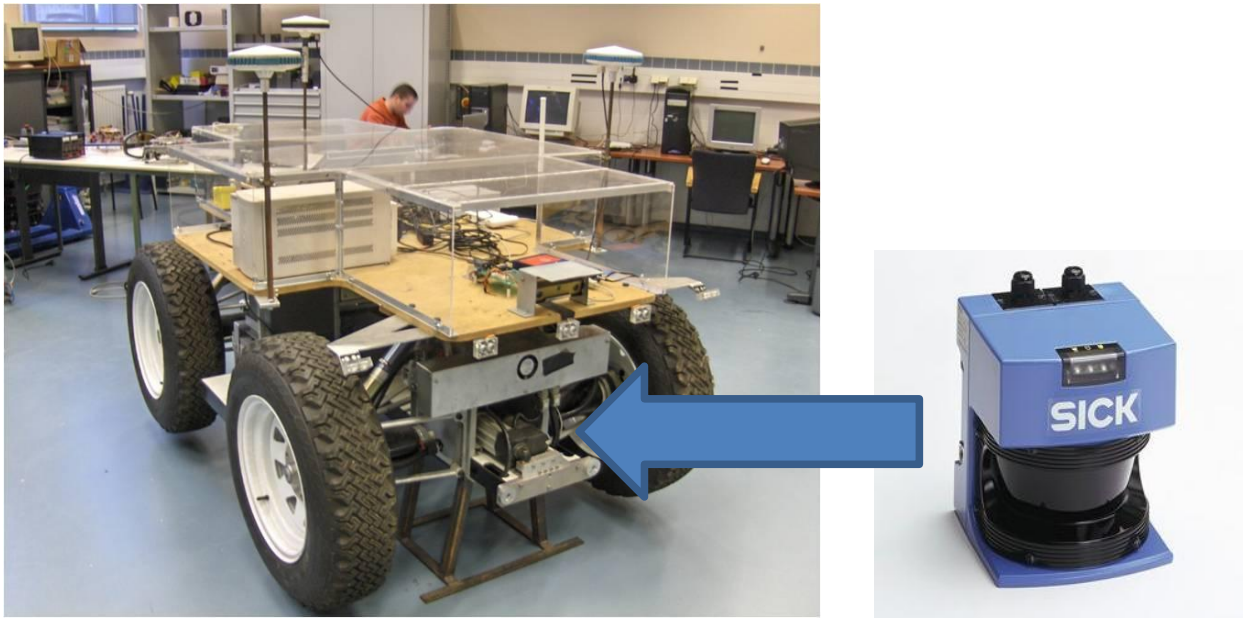
Laser Scanner Installation and Data Analysis for Traversability Analysis

Thesis outline

The current outdoor robotic research platform of the UGV Centre (see leftmost picture below) disposes of a large array of sensors: GPS, stereo camera, Orientation Sensor, Ultrasound Sensors. However, it does not dispose of a Laser system. With this project, we want to tackle this issue by installing a Sick LMS 200 Laser (see rightmost picture below) on the robot.



The Laser system will of course also need to be controlled, such that data can be retrieved from the Laser system, such that it can be analyzed. As a first application with this Laser, we want to detect whether the terrain in front of the robot is traversable or not, based on the Laser Data.

Student Tasks

The student will receive the following:

- An outdoor all-terrain robot + help on handling this robot
- An LMS 200 Laser + documentation + SDK + example programs

With this information, the student is required to output the following:

- Design and Implement a support to mechanically install the Laser on the robot
- Write a small program to retrieve data from the Laser
- Write a small program to analyze this data, deciding on the traversability of the terrain

Student Profile

- Knowledge of programming C++
- Sound interest in robotics