Praktikum / Bachelorarbeit

Encoders, Camera Image Augmentation and Embedded Scripting for a Teleoperated Mobile Robot

Introduction

Chair VII runs the Telelab together with vhb (Virtuelle Hochschule Bayern) with which students can take online courses and work with remote hardware over the internet. An experiment in the Telelab consists of a tutorial describing theoretical background information on a topic and detailing an experimental procedure, which students should follow in order to create and submit a report.

We have a mobile robot which needs to be extended to allow students to perform experiments. Firstly, the student researches for a wheel encoder that can be added to the current hardware setup. Data from the encoder has to be passed on to the on-board and server-side software which then relay it for display in a browser-based GUI. The GUI will thus have to be extended to display this new sensor data. In addition to this, the server-side software should be extended with an embedded scripting language so that students who perform the experiments can for example, extract sensor data at regular intervals by writing their own functions. The server-side software should be extended to provide an API for overlaying data on the overhead camera image.

Tasks

• Extend robot’s software and hardware to include wheel encoders
• Extend server software with a scripting language
• Perform camera calibration and provide an API for augmenting the camera image with overlays (e.g. based on sensor data)
• Implement overlays for displaying travelled paths

Prerequisites (Not compulsory but advantageous)

Microcontroller programming in C, C++ and JavaScript

Kontakt

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