Piotr Lesicki 151052 - Line Follower

General description

Line Follower - as it's name implies this robot will realise the task of following the line. The robot will consist of two motors, imu, line sensors (white/black color detectors), motor encoders as well as an external data storage (flash/sd card) for data logging and of coures it will also have an uC for general control.

Hardware

Motors & motor encoders

The robot will use a simple brushed motor with an extended shaft for the encoder feedback

IMU

A six axis IMU will be used for data logging.

line sensors

Basic refleted light detectors will be used for estimating where a black line on a white background is.

External data storage

A external storage in a form of a chip or a sd card will be used for logging

uC

An STM32WB55RGVx will be used for the heart of the robot. It will also allow for a bluetooth communication implementation to be included in the project, making the whole project smaller and more compact.

Line Following task - regulator

The appropriate regulator is yet to be chosen

Software

RTOS

For an easier implementation of software a fitting RTOS will be used. Azure RTOS will be used for that since it implements many robust sub-libraries allowing for light-weight aplications, such as storage (file storage) drivers for external flash/sd cards or usb interfaces allowing for on slave multiple devices implemantation and much more.

Examples

- https://forbot.pl/blog/leksykon/robot-typu-linefollower
- https://www.jsumo.com/arduino-pid-based-line-follower-kit1