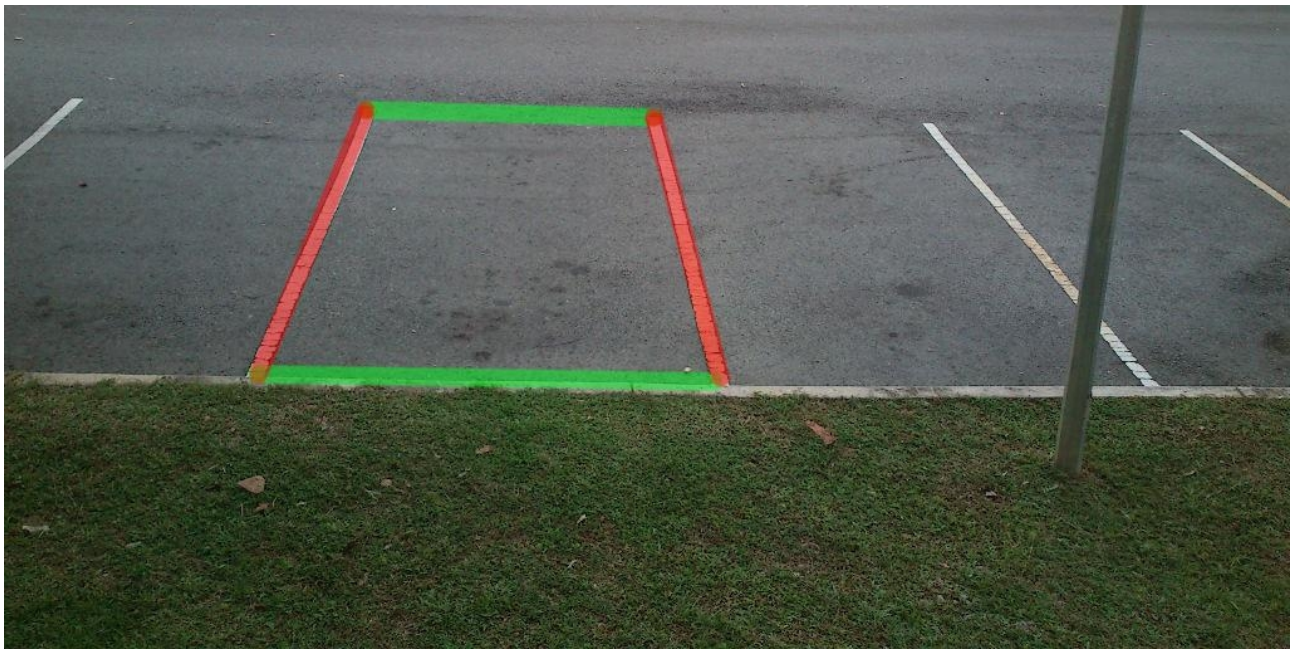
Line detection project RoboHub Eindhoven



Backstory:

At the RoboCup@Work challenges navigating is a important task for their robot called Suii since it is a part of every challenge. To make navigating harder, “barrier” tape is pasted on the ground to mark no go zones. Currently the robot can’t detect the lines and drives over them, causing the team losing points.

What do we want:

Team RoboHub would like a software solution for detecting lines and adapt navigation to drive around the barrier tape.

The end product:

- A working software solution for detecting lines and broadcast them in RVIZ so the robot knows were not to drive.
- Implement the software in the robot and make the navigation adapt it’s path planning to it.
- A Tutorial on how to use the software.
- The documentation has to be done in Markdown or Asciidoc so it can be publised on GitHub.
- A class and dataflow diagram of the software.
- The documentation and the software has to be on GitHub where the actual workflow can be followed.
- A demo for the team when the project is finished.

Research before starting:

Start dividing the project is different parts like the detection of the lines, getting the real measurements of the lines, broadcasting them in RVIZ and finally adapt the navigation of the robot to avoid the lines. For help in the vision and navigation part, a lot of knowledge is already within RoboHub Eindhoven and everyone is eager to help! Furthermore, first start to get familiar with python, ROS and OpenCV(a library for vision systems) before starting to face the more challenging parts of the project.

Motivational pitch for the project:

For this project you will need to gain knowledge in software using the language Python and ROS. You also need to get familiar with the already function navigation software which currently runs in the robot. Due to the combination of vision and navigation it is a real diverse project. The project is really important for our team because we can save a lot of points not driving over the barrier tape.

Project requirements from Fontys:

- Money: Expected 0 eu.
- To get it working we expect working with two people on this project is recommended.
- The software can be developed on students own PC running with Ubuntu 18.