

VarastoRobo – Image Recognition

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Introduction

The aim of this project was to make an autonomous storage management system, in which multiple devices work in co-operation to transport ordered packages to a drop-off point. In addition a drone was to function as surveillance system for the premises.

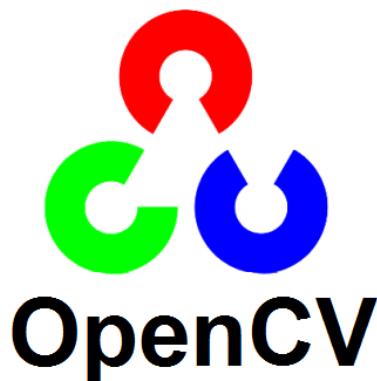


FIGURE 1. OpenCV logo

OpenCV

OpenCV is an open source computer vision and machine learning software library. It has more than 2500 optimized algorithms for shape detection, movement tracking, face detection etc. It has C++, Python, Java and MATLAB interfaces with support for Windows, Linux, Android and MacOS.

Methods

Shape recognition was done by finding shapes that were green in video. Which shape was detected was determined by how many contours detected shape has. This was done by using OpenCV libraries.

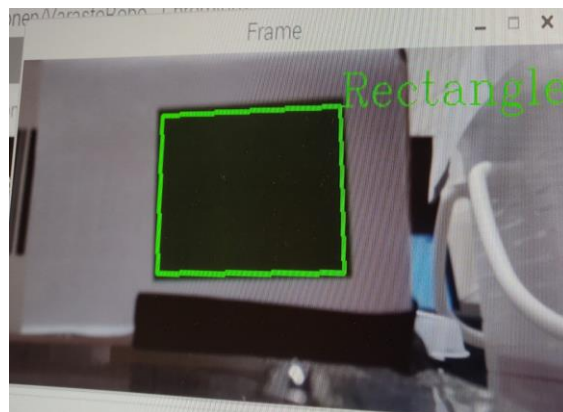


FIGURE 2. Detection of green rectangle

Results

Results of image recognition was good. After testing green colour was chosen for shape detection. Round shaped package gave a little problem because shape that was in the package, was a little bit curvy and the camera didn't notice the shape very well. Square package worked perfectly.

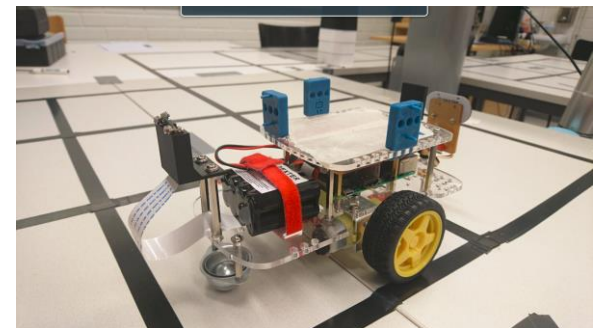


FIGURE 3. Camera location

Conclusions

Another colour could have been used but green was chosen because it had least background interference when there was no package on GoPiGo.

During the project group learned to use OpenCV and how it can be used in this kind of project.

References

1. VarastoRobo GitHub:
<https://github.com/Jarno-Poikonen/VarastoRobo>
2. OpenCV:
<https://opencv.org/about/>