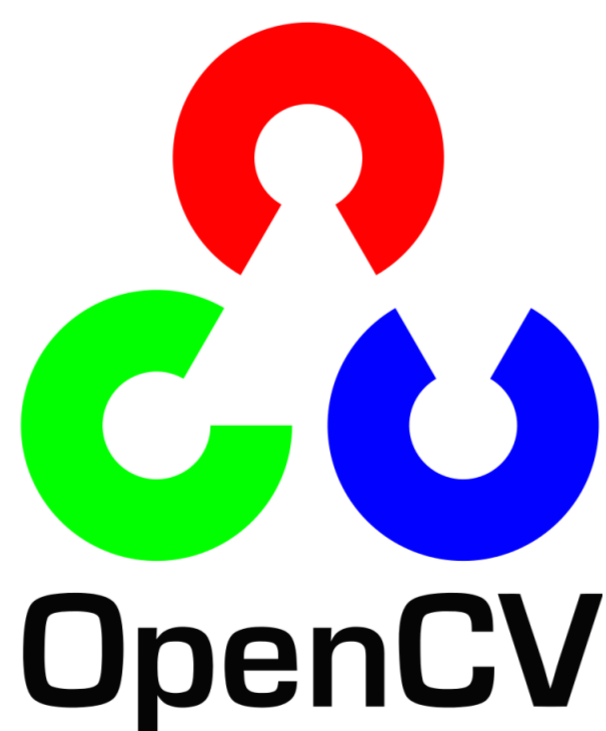# Kuka Robot — workshop assistant

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Introduction

In this project we are using industrial Kuka iiwa robot to create a "robot assistant" for the lab or workshop that will be able to work with different tools, such as screwdriver, hammer or pliers. Robot will be able to recognize those tools, place those tools on the tool stands or give them to a person.

Method

The project contains four main parts: Kuka robot, Beckhoff PLC, Raspberry Pi 4 and PC.

Raspberry Pi is used to run open source OpenCV library to detect tools and calculate coordinates and angle of rotation for those tools.
PC is used to run open-source Speech Recognition Python library that will be used to understand the voice commands given by the user.

The PLC will use received data from Raspberry Pi and PC to calculate the operation that the robot should perform

OpenCV

Speech → Text

Result

The result we achieved so far for this project is that we have a setup where Kuka robot can understand voice commands given from the user. Robot can receive coordinates of the tools with the help of web camera and PLC. Lastly, robot can perform pick and place tasks of objects based on different voice commands.