

Robot Arm

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1. Idea

Our idea is to build simulation of the robot arm that can be controlled, by the user's hand via camera using computer vision.

Simulation is being built in the Simulink (picture of inspiration below), mainly by Jaakko. And computer vision part will be in Python or in C++ (Mikhail has not decided), and it will be using Google's Mediapipe library.

In depth our idea is based that we will have program that will open web camera of the computer and it will detect users hand, and calculate theirs coordinates, after what program will send this coordinates to the Simulink where robot arm will receive them and move itself according to them. On the start this all will be two dimensional, but if we will have time and motivation, we will make this three dimensional, where computer vision will be calculation distance to the hand from the screen.

2. Structure

Structure is relatively simple. Computer vision part will be having one class that will detect and calculate coordinates of the hand, and one main file that will be calling detection class and sending coordinates to the MatLab / Simulink.

Simulink part ...

3. Division of work

Mainly Mikhail will be developing computer vision part of this project and Jaakko will be developing simulation part. But also our idea is to learn with this project so both developers will be telling and explaining own art to another one so both will be having understanding of the whole project.