

Project proposal

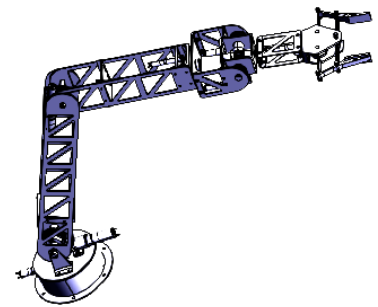
Title: Automatic Manipulation Software
 Supervisor: TBD
 Timeframe: Spring 2021

EPFL Xplore is an interdisciplinary project whose aim is to design and develop a Rover to participate in two international competitions: the University Rover Challenge and the European Rover Challenge. As part of 2 out of 4 missions, the rover will need to autonomously approach an object and grasp it by mean of its robotic arm.

Project description

Problematic

The goal of this project is to develop the software to enable the arm to autonomously approach an object detected in the field of view of the arm camera (button, cache). The object recognition software is already implemented as well as the inverse kinematics model of the arm. The student will have to use those softwares to control the arm and autonomously grasp the object detected.



Means

For sequential uses, the algorithm is expected to run on a 8-core 2.3 GHz ARM CPU. For parallelisable algorithms, a NVIDIA Jetson GPU unit is provided with at least 22 TFLOPs as processing power. At least 16GB LPDDR4 memory will be at disposal.

Reference documents

- [1] NVIDIA Jetson Xavier AGX, <https://developer.nvidia.com/embedded/jetson-agx-xavier-developer-kit>
- [2] Intel D435i <https://www.intelrealsense.com/depth-camera-d435i/>

Contact

arman.ehsasi@epfl.ch