

# Robotic Manipulator

## Exploiting RC Components and Servos

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The goal of this work was to create a robotic arm using off-shelf components and 3D printed parts. The work has been done and a robotic arm was created. The arm is functional and can be controlled using ROS2.

Absolute magnetics encoders on all 6 joints

IO terminal for external accessory

Gyroscope and accelerometer

Flange with dimension based on ISO 9409-1 31,5-4-M5 standard

Weight and force sensors on all 6 joints

NEMA stepper motors with MKS drivers

Joint 4

Joint 5

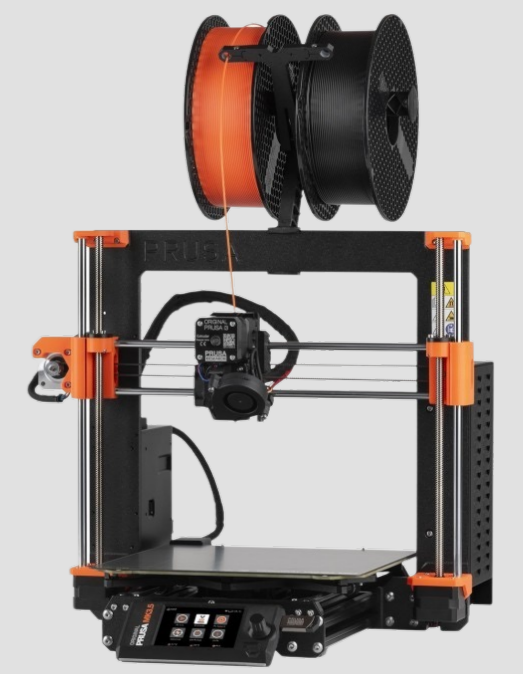
Joint 6

Joint 3

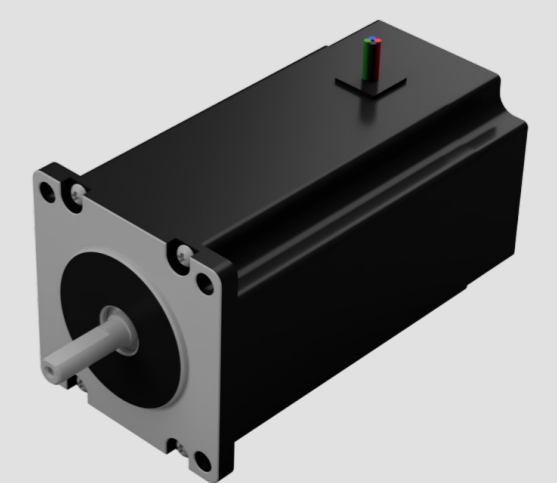
Joint 2

Joint 1

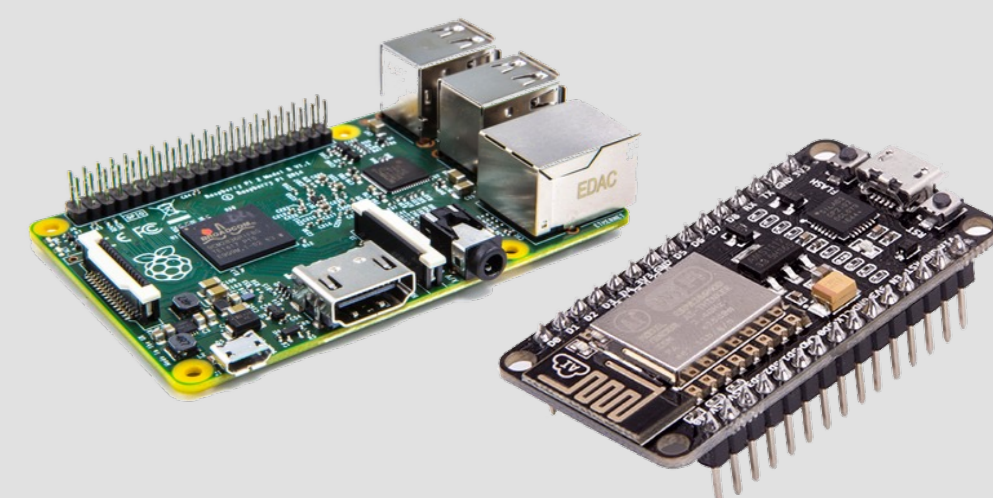
Custom 3D printable gearbox in each joint



3D printer



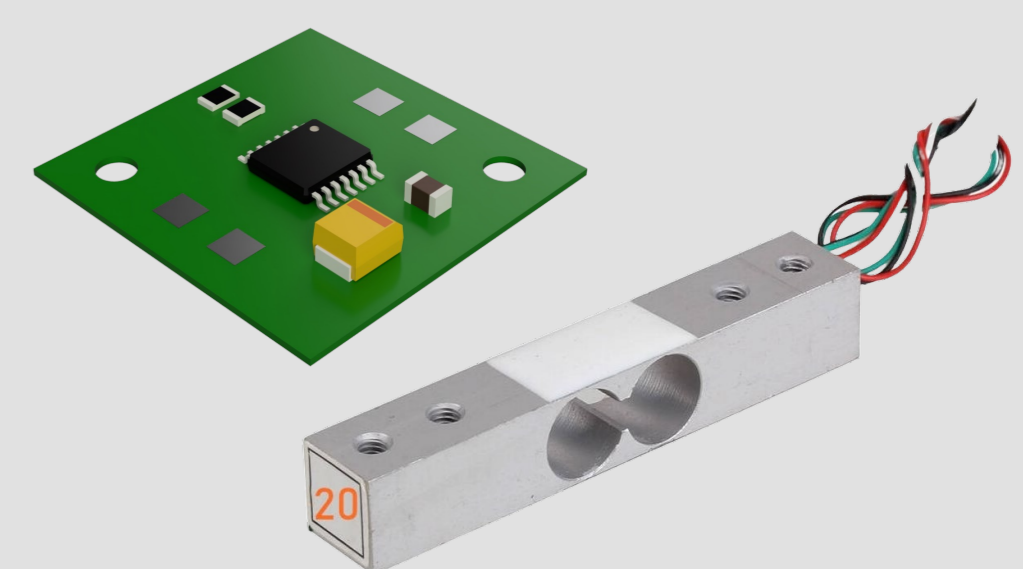
2x NEMA17 stepper motor  
4x NEMA23 stepper motor



1x RaspberryPi 4b  
3x ESP32 dev kit



24V DC power supply



Sensors



Mouniting hardware