Team KitKat

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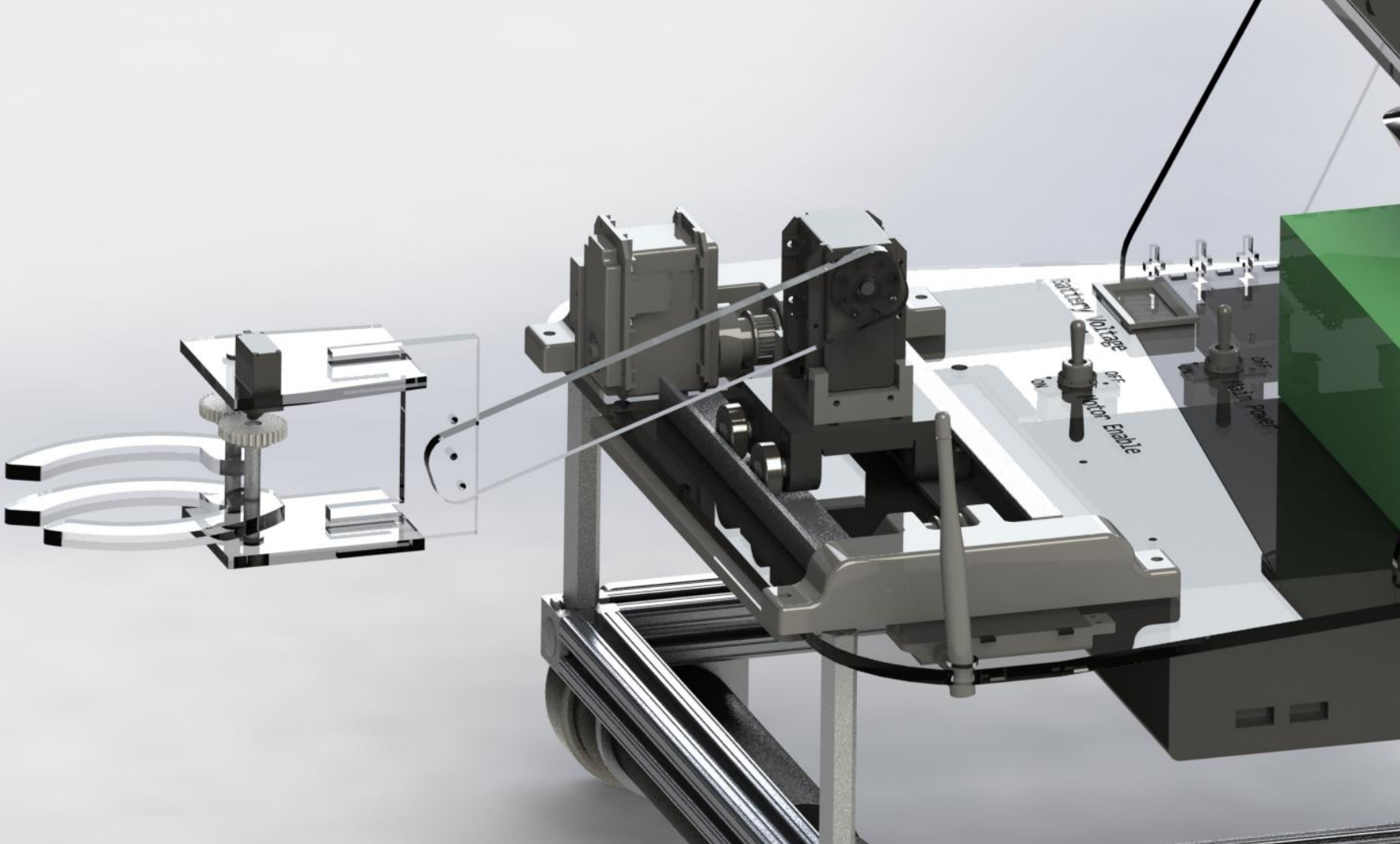
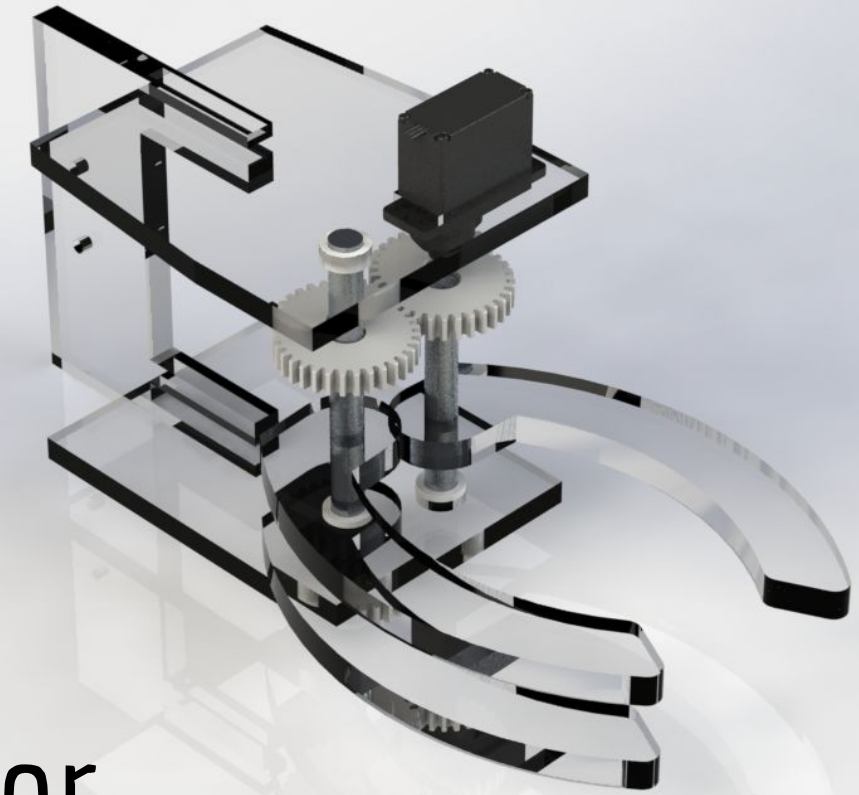
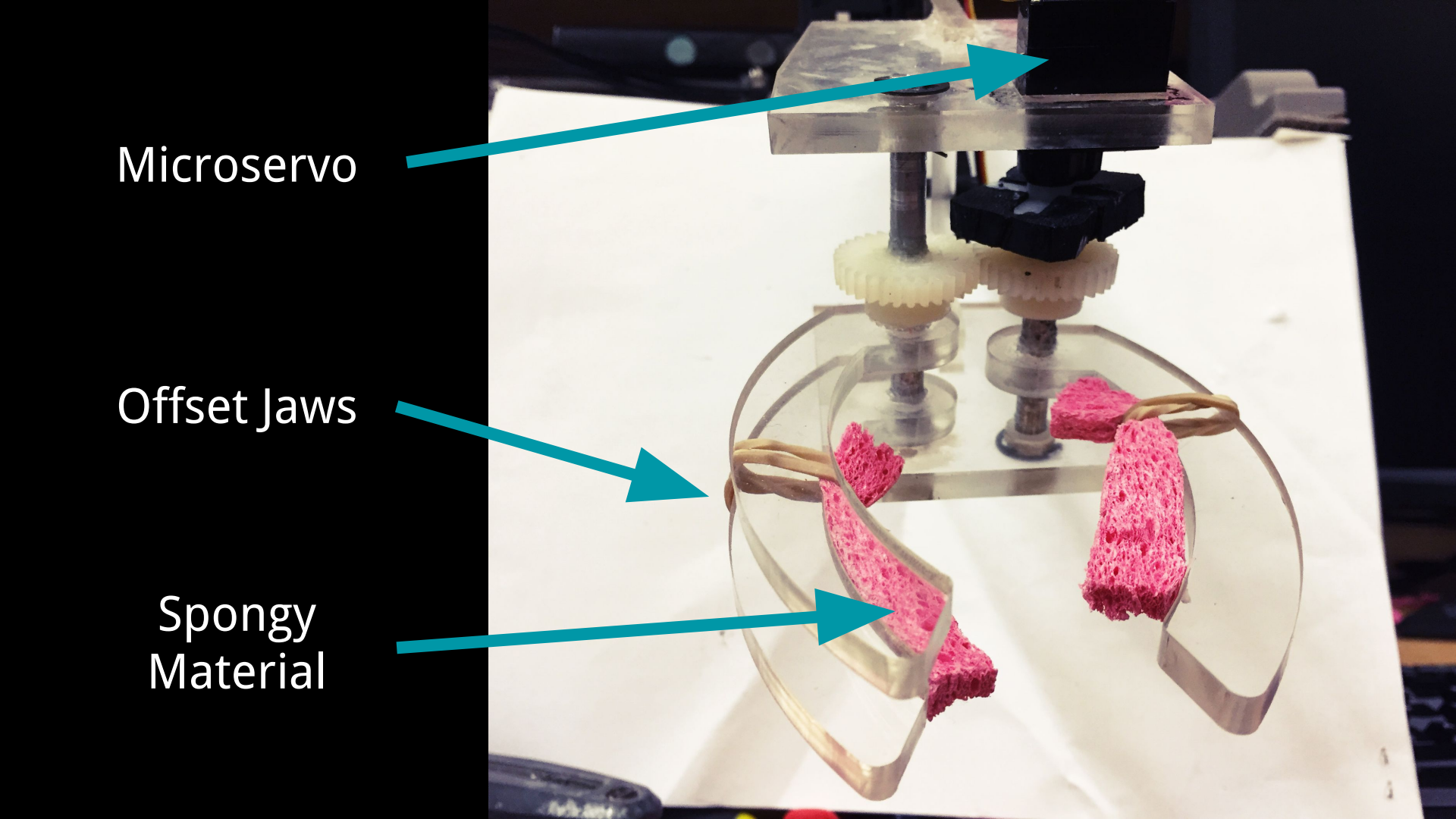
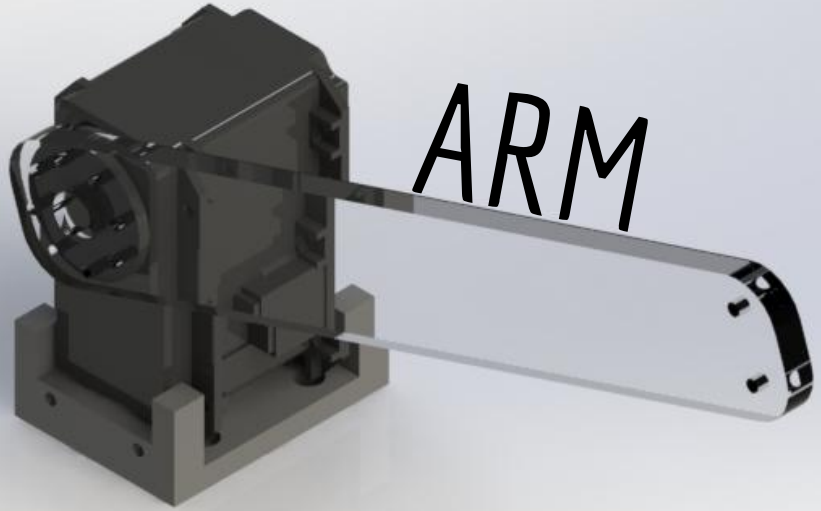
Mechanical Design


Battery Voltage
Motor Enable
Main Power

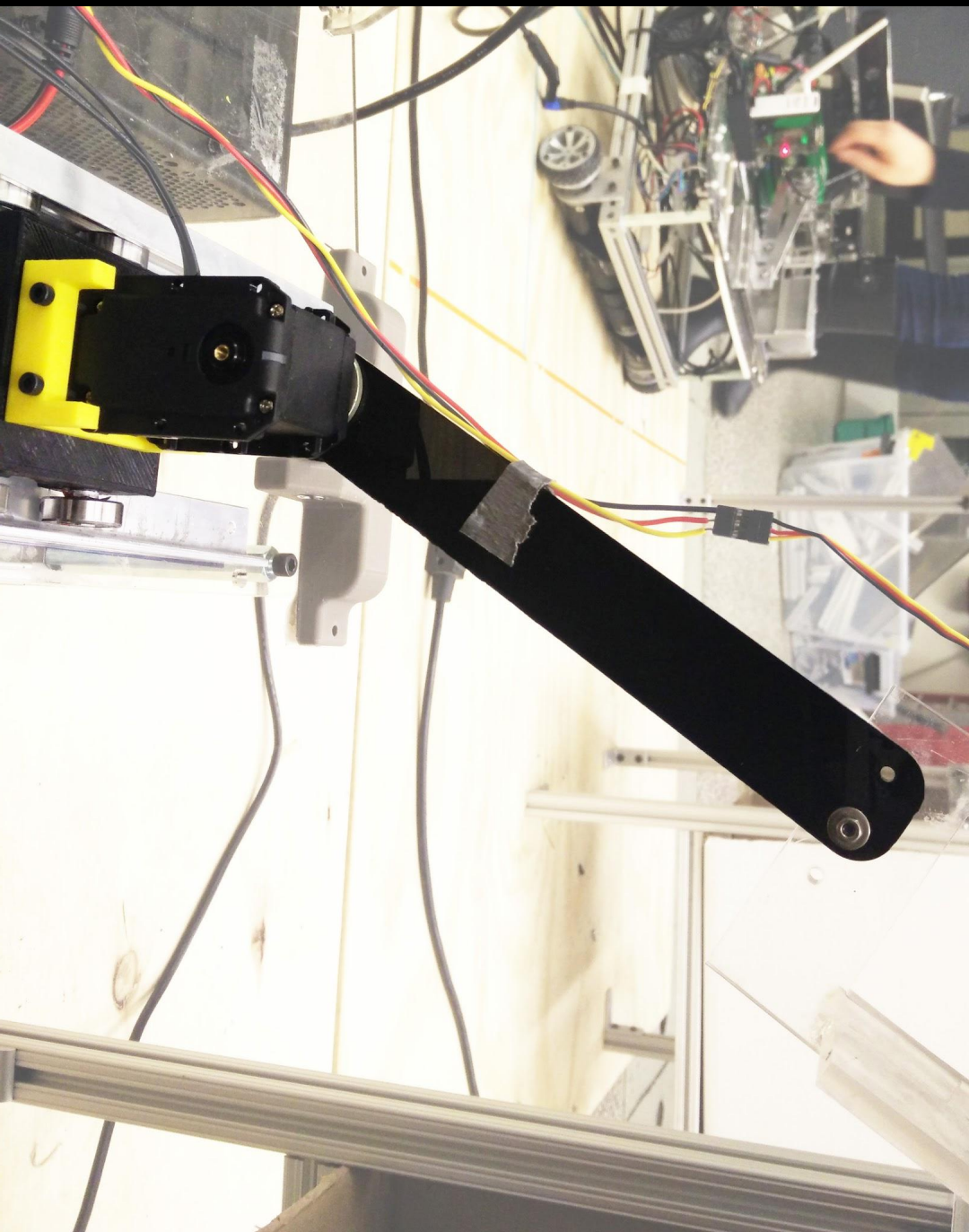


End Effector

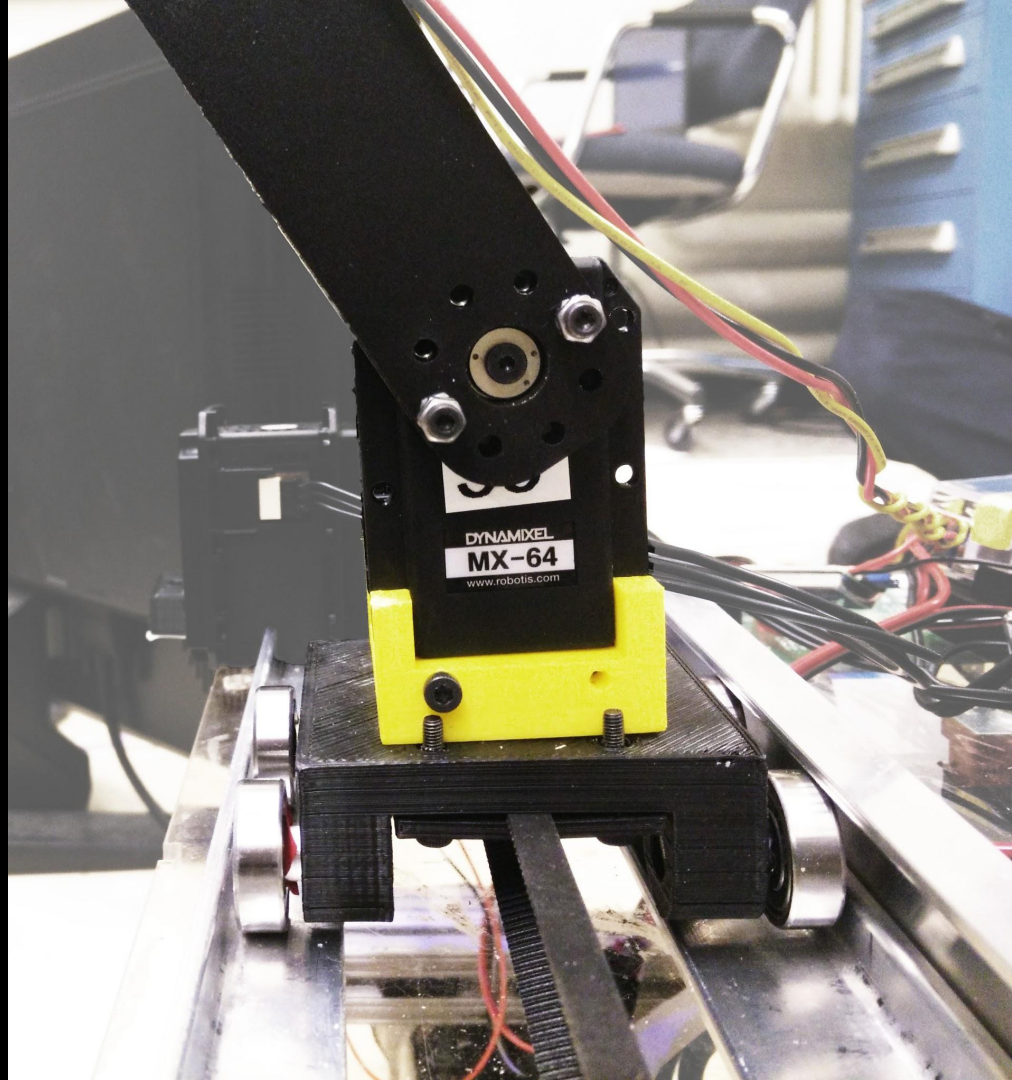

Microservo
Offset Jaws
Spongy Material


ARM

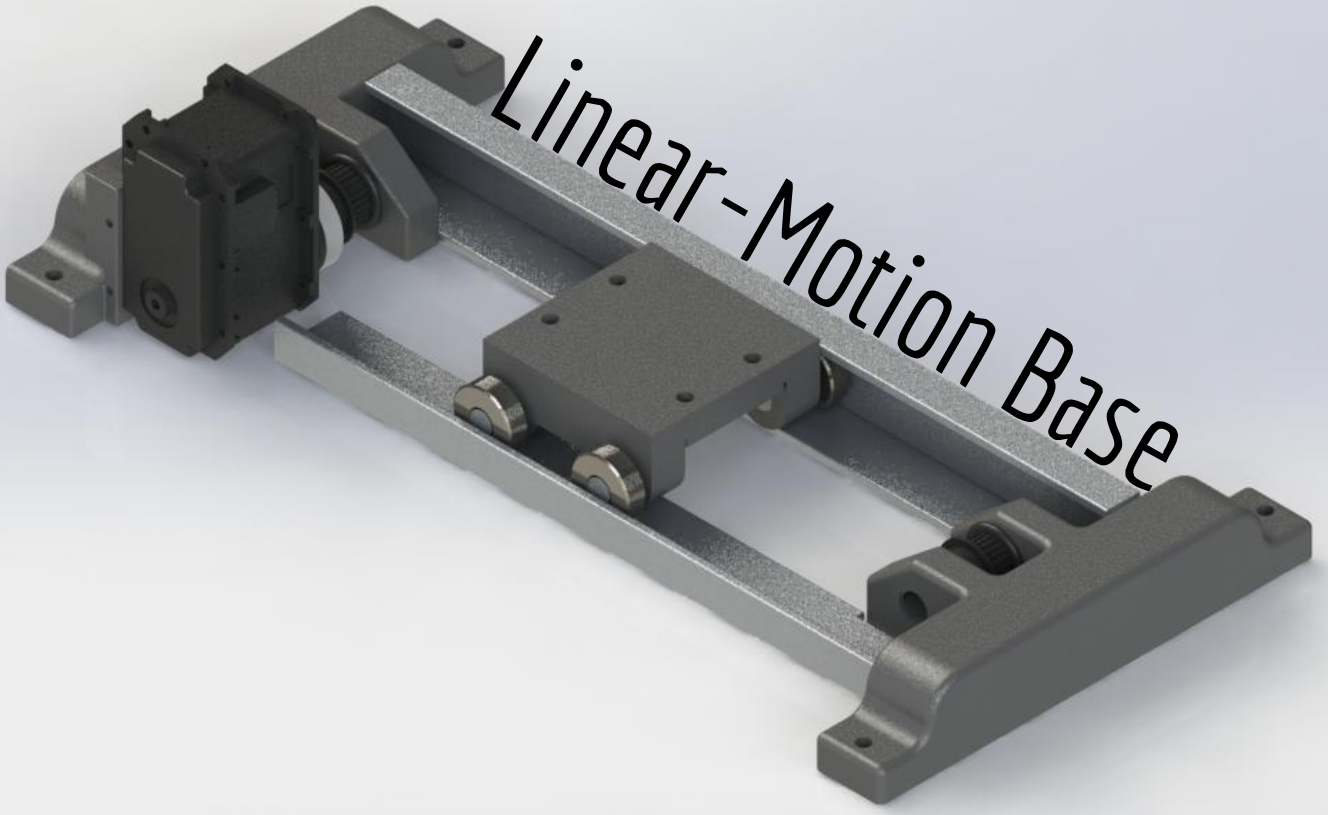
ARM



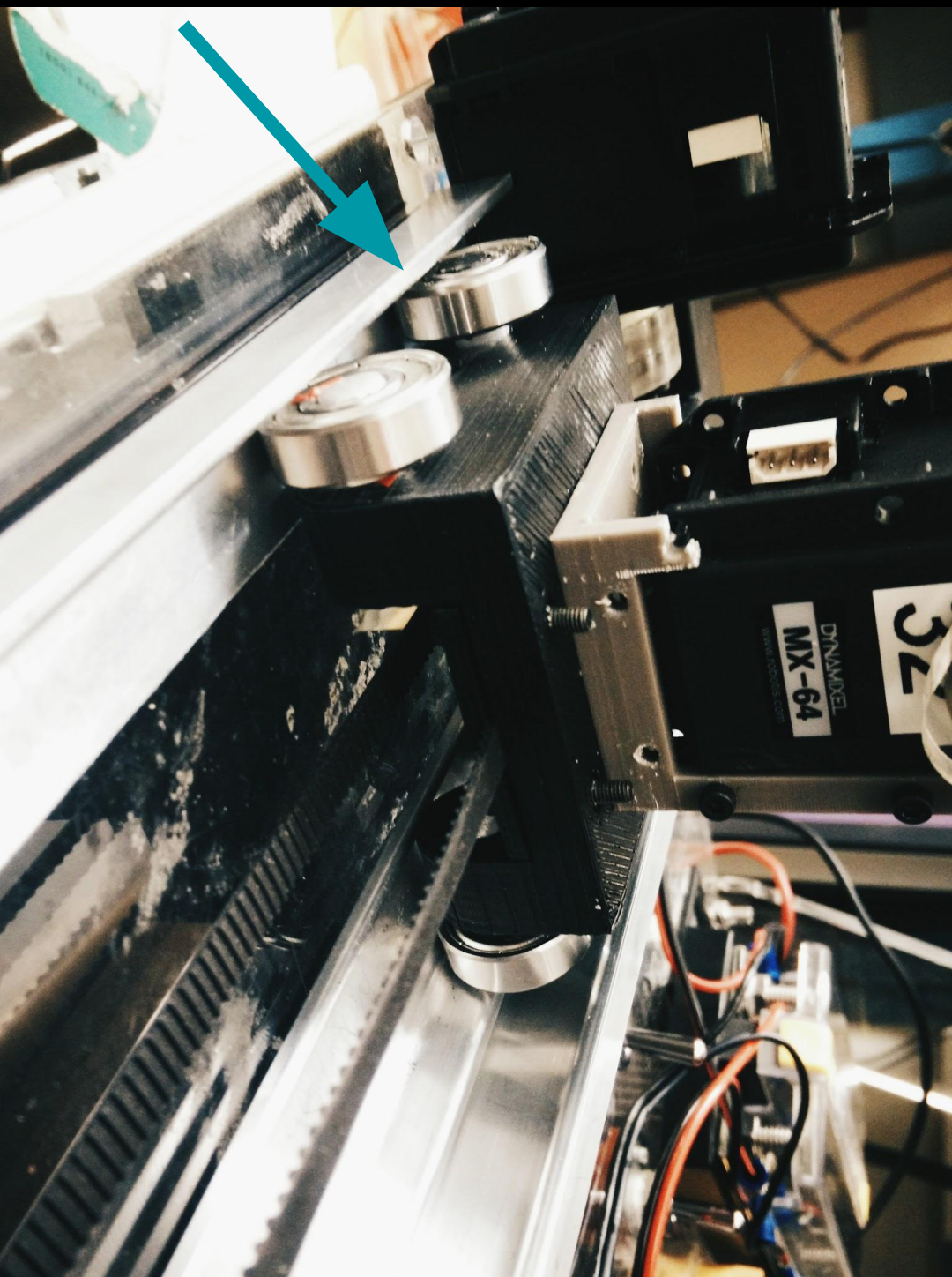
MOUNT



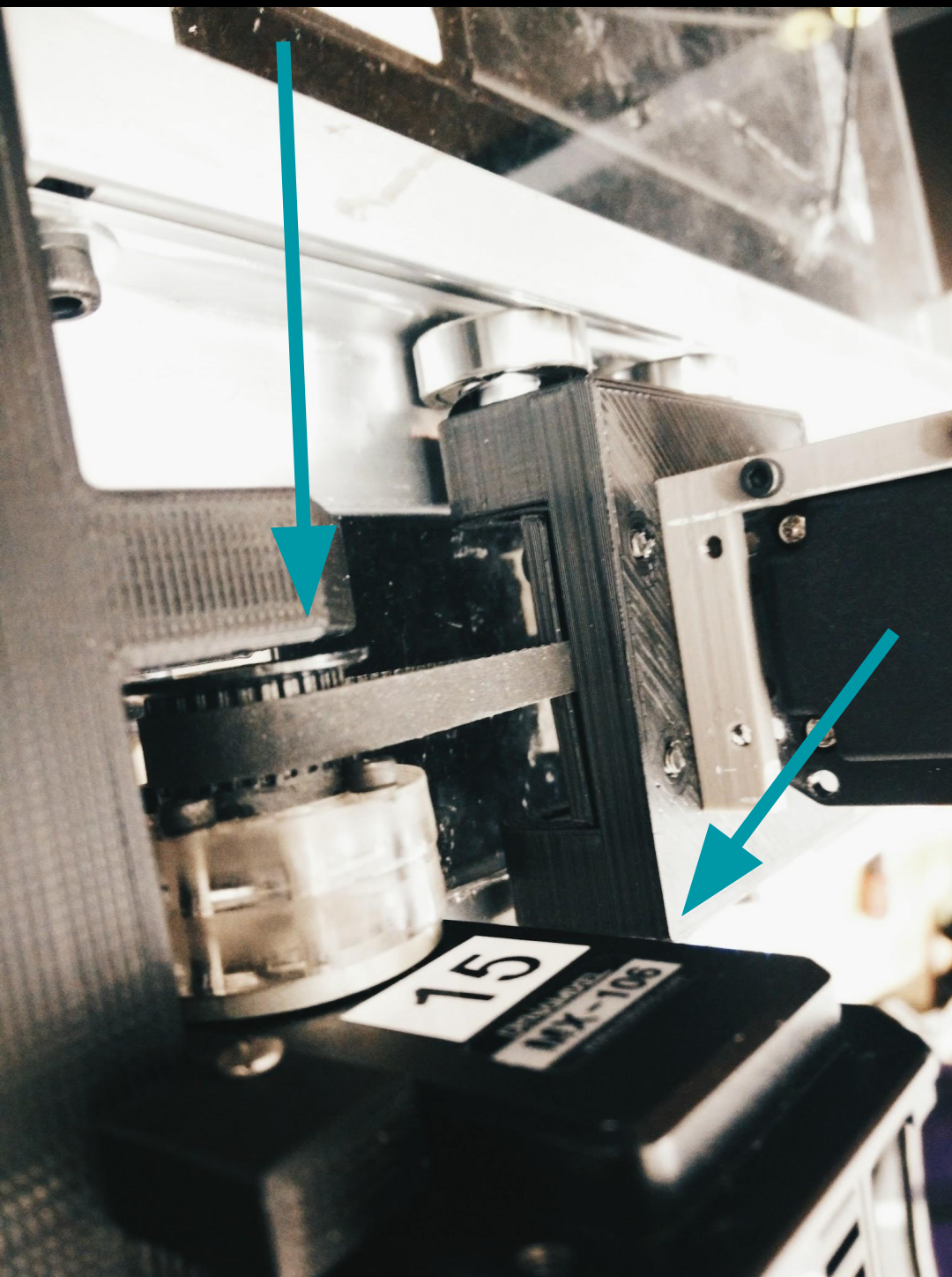
Linear-Motion Base



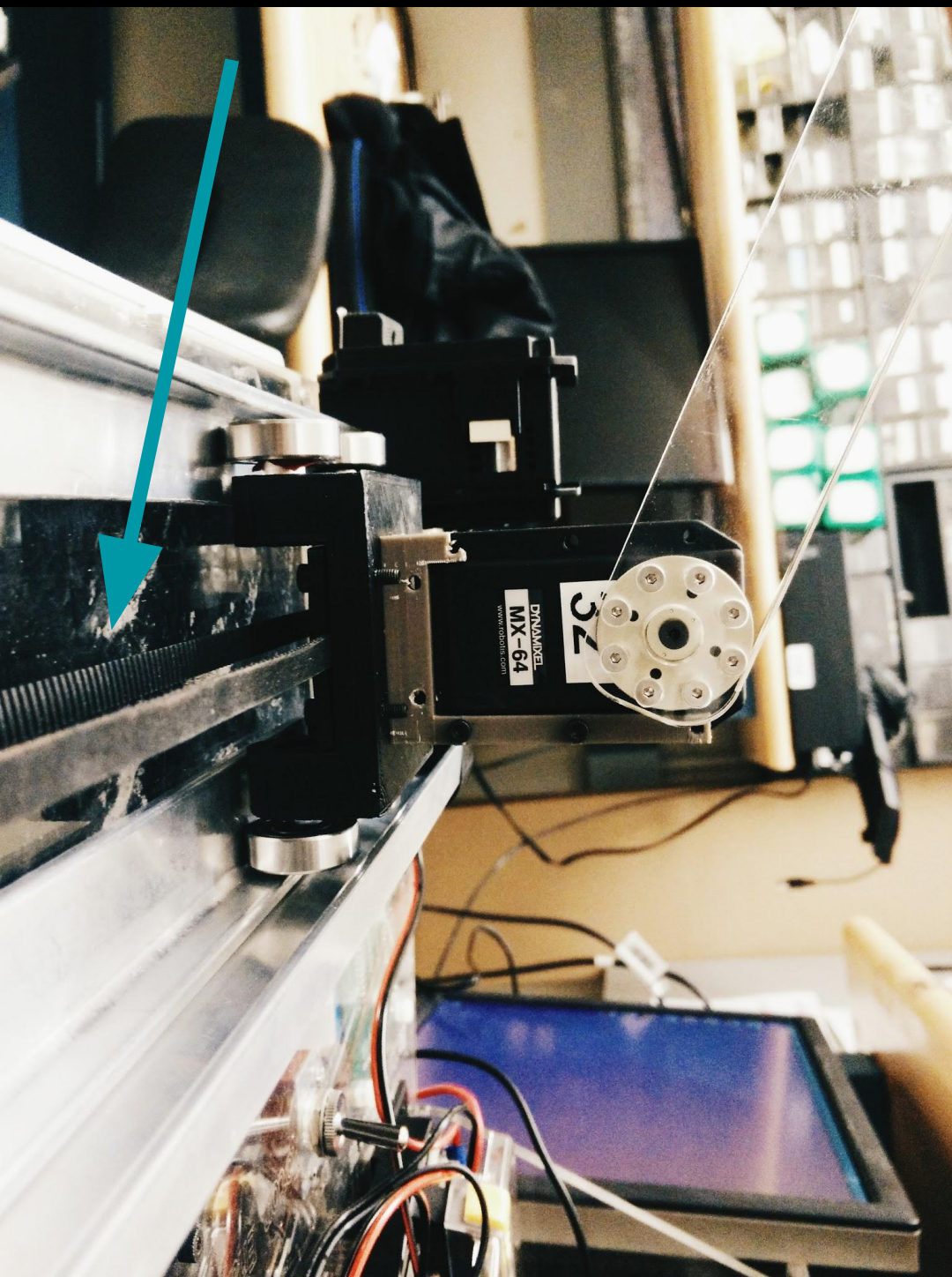
CART



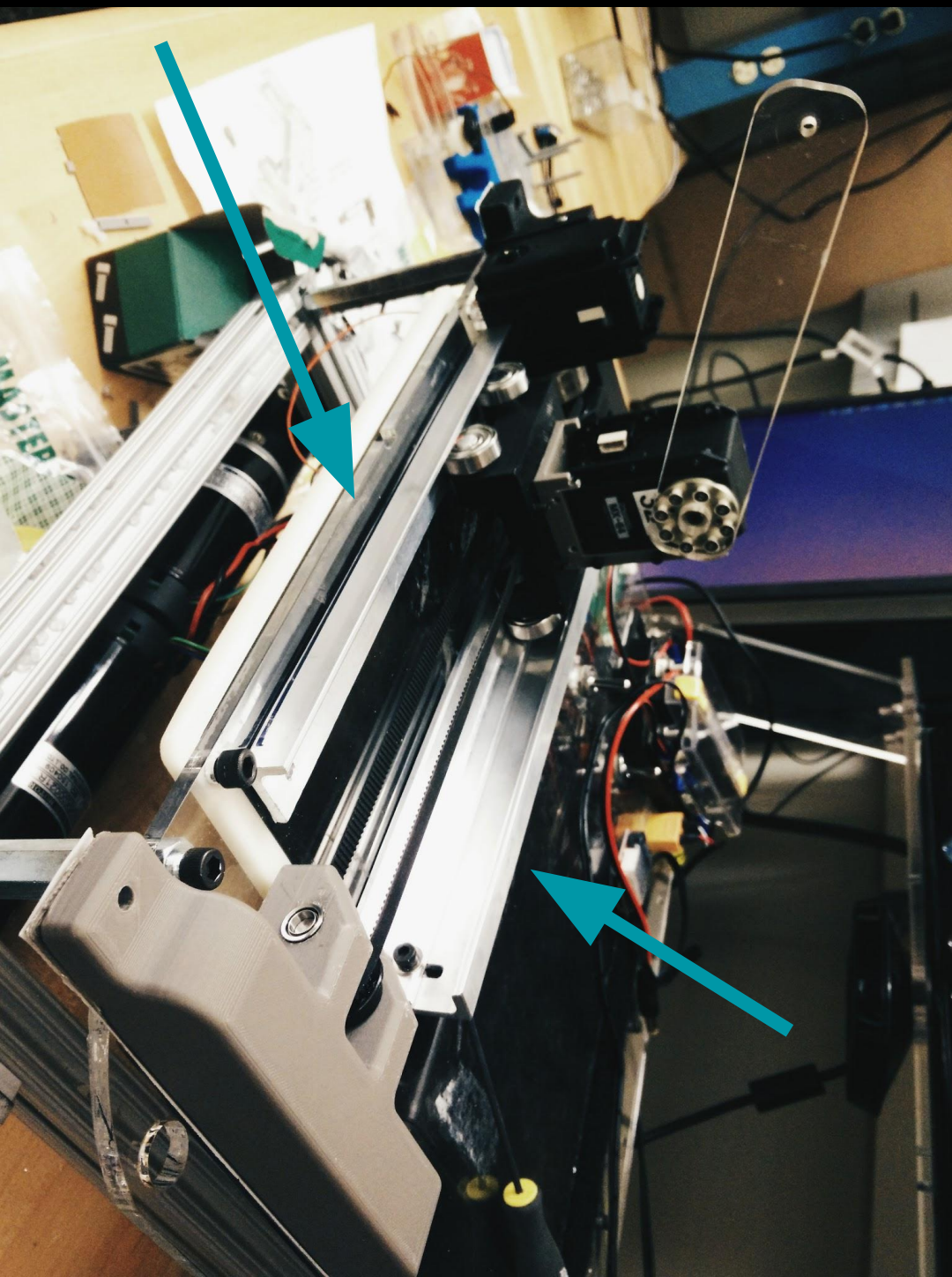
ACTUATION



BELT DRIVE

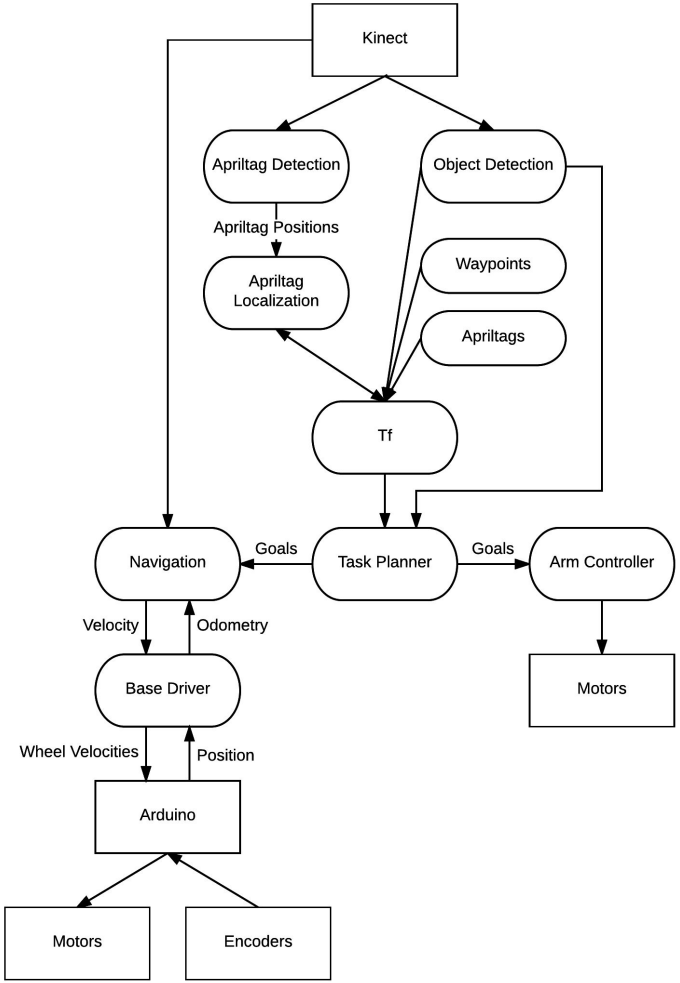


RAILS



Software Design

Mind Map


Kinect
Apriltag Detection
Object Detection
Apriltag Positions
Apriltag Localization
Waypoints
Apriltags
Tf
Navigation
Goals
Task Planner
Goals
Arm Controller
Velocity
Odometry
Base Driver
Motors
Wheel Velocities
Position
Arduino
Motors
Encoders

Object Detection

- Create a scoring function by multiplying our depth map by our color mask
- High enough scores are tagged as objects
- Tag all objects with their associated color
- An object found above a y-axis threshold is the sample color
- Transform pixel values to physical location

Navigation

- Using ROS navigation package
- Load predefined map with april tags
- Define waypoints with respect to april tags
- ROS SLAM implementation handles obstacle avoidance and path finding
- Waypoints queued by task planner

Thank you

Questions?