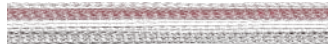


# Progress Meeting 1



Team C: Kaushik Balasundar, Parker Hill, Anthony Kyu, Sundaram Seivur, Gunjan Sethi

26 January, 2022





# Schedule

# Roadmap

Give feedback

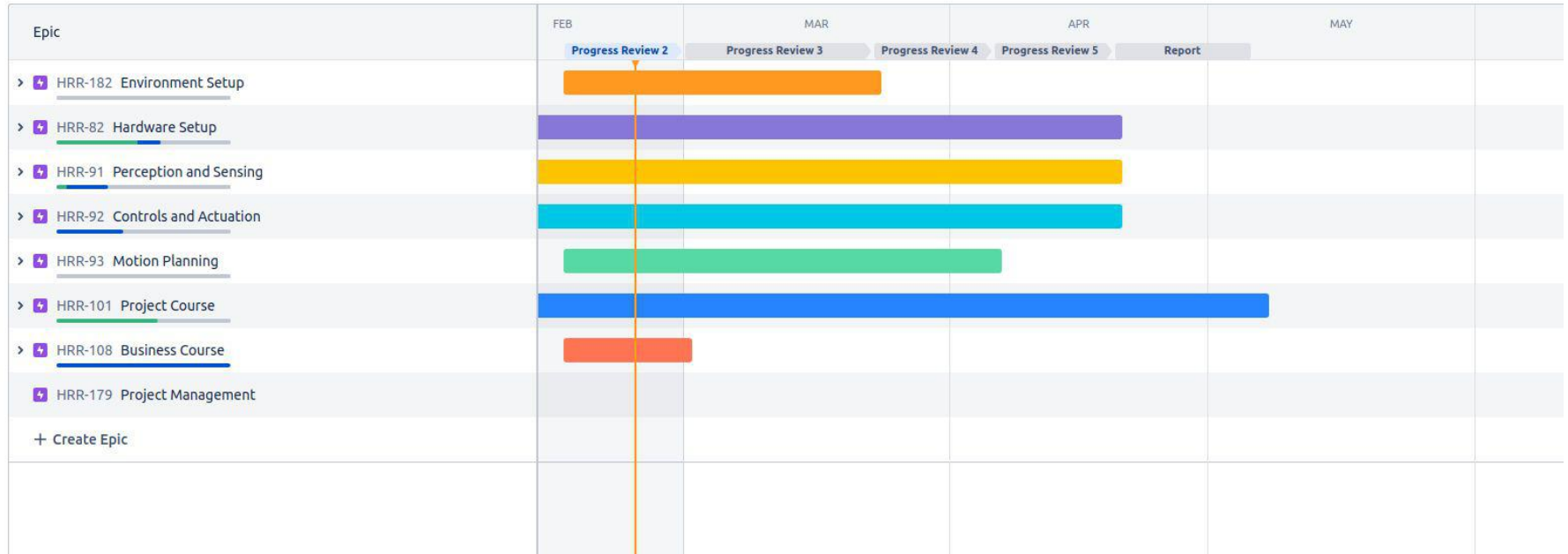
Share

Export

GS PH SS AK +2

Status category ▾

View settings



# Docker & ROS Setup

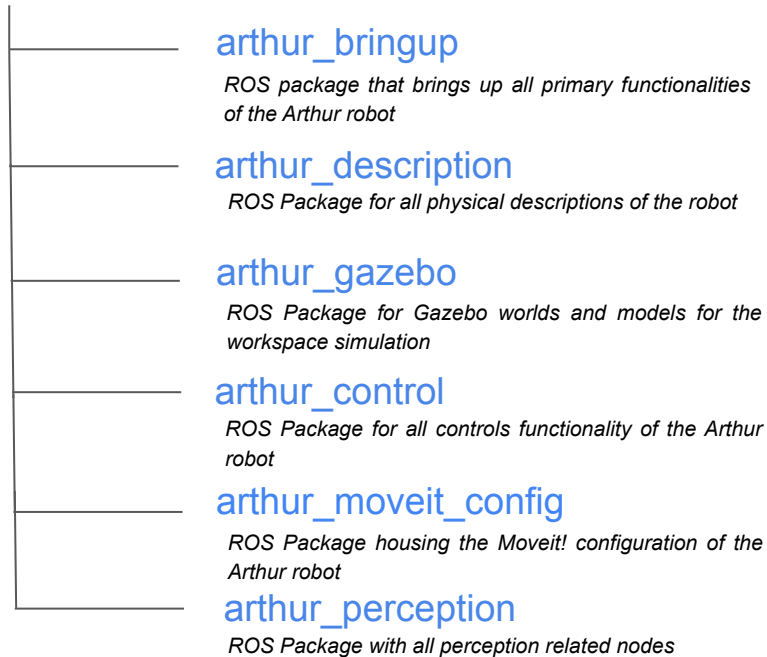


docker<sup>®</sup>

# Code Structure

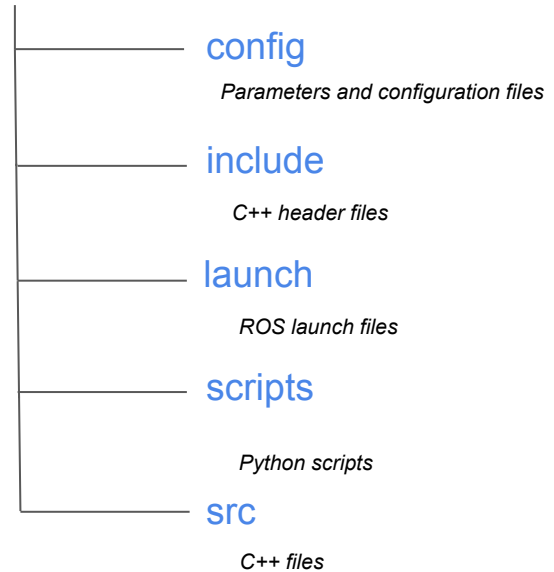
## Package Hierarchy

arthur\_ws



## General Package Structure

ros\_package



# Simulation

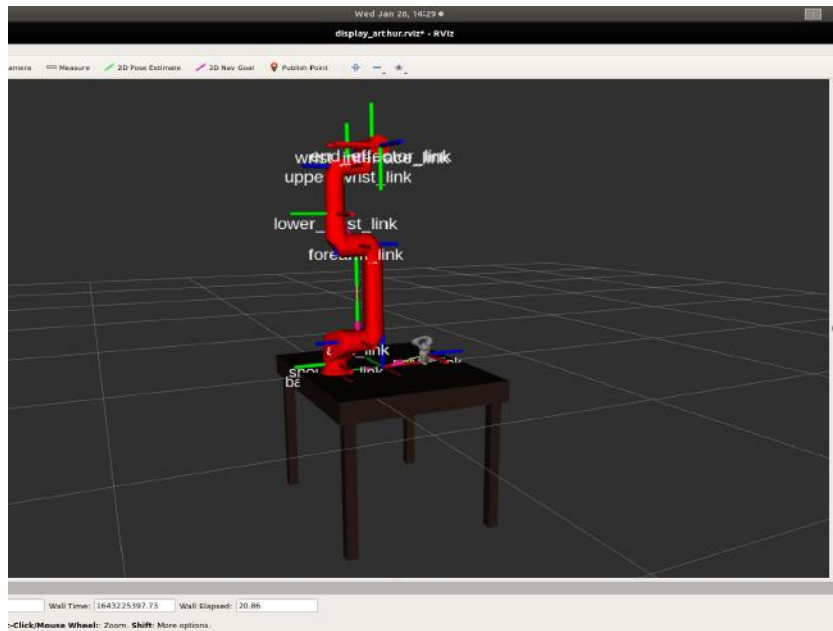
- Primary Merits
  - Allows us to make progress until the hardware
  - Allows us to validate and verify motion planning
  - Design test cases to validate the efficacy of dynamic motion compensation
  - CI/CD tests
- Current Progress:
  - Refined URDF provided by Kinova
  - Visualization on RViz
  - Added a table model
  - Added a pelvis model
  - Added actuation capabilities
  - Added tags for Gazebo compatibility
  - Configured Arthur's Moveit! Package

 ROS

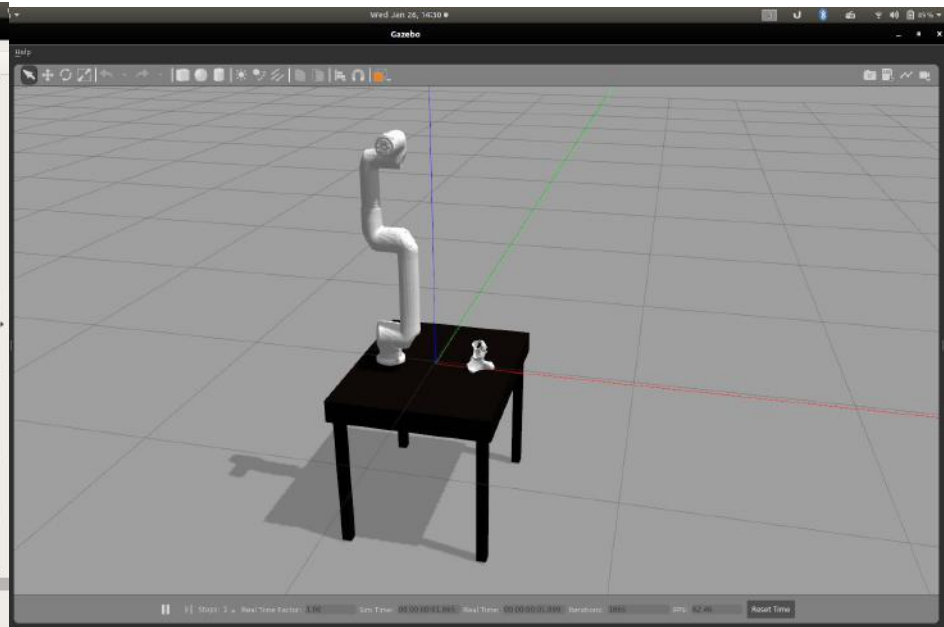
 GAZEBO



# Simulation



Arthur Visualization with TFs in RViz



Arthur Gazebo Simulation Environment

# Simulation

- Work ahead:
  - Discussion with sponsors on Robot arm compatibility with ROS & C++
  - Configure Moveit! Package in simulation
  - Create an IKFast Inverse Kinematics Plugin
  - ROS Testing Template
  - CI/CD Framework

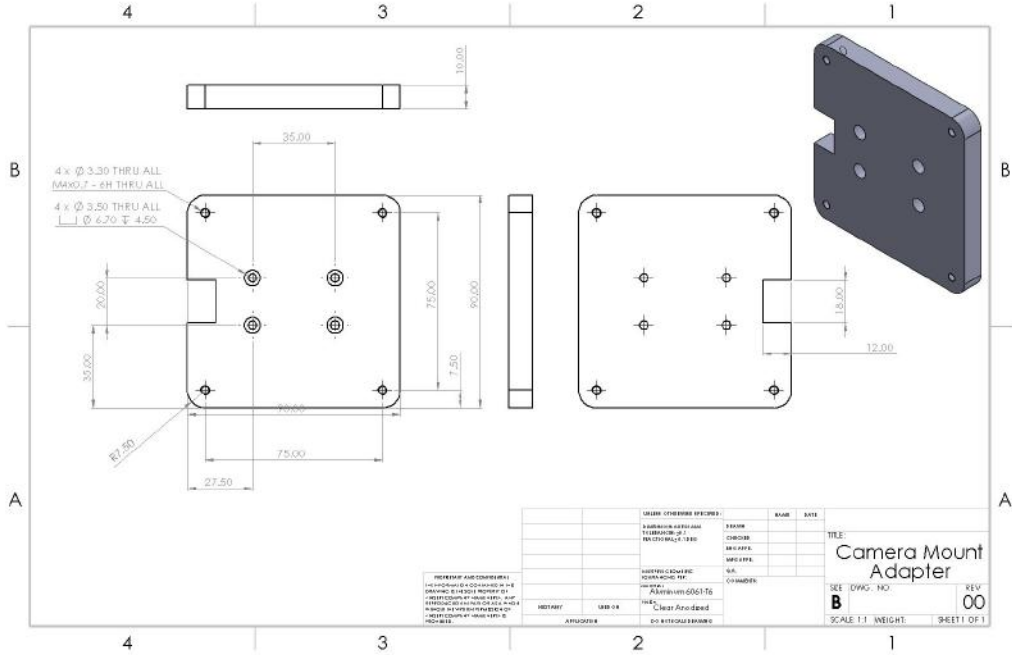
 ROS

 GAZEBO





# Camera Mount



Material: Mic 6 Aluminium



# Pelvis Marker Mount



# Camera + ROS Integration

- Setup Atracys Sprytrack 300 Camera SDK and ran sample scripts.
- Developed proof-of-concept for a ROS package that discovers camera + loads geometry file.
- Documented challenges, errors and setup:  
<https://hipsdontlie.atlassian.net/wiki/spaces/~97717424/pages/26148874/Integrate+Atracys+SDK+with+your+ROS+Package>

Future Work:

Obtain fiducial marker poses, typecast them to standard ROS type and publish to topic.

# Controls Research

ROBODOC:

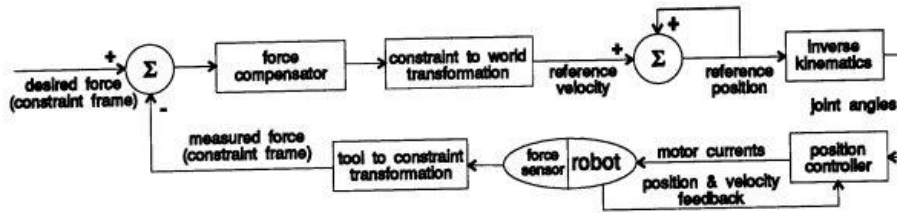


Figure 1: Force controller

Model Predictive Control:

## Model Predictive Force Control for Robots in compliant Environments with guaranteed Maximum Force

Publisher: IEEE

Cite This

PDF



# Thank You!