Week 13 TA Debrief

Dylan’s Work

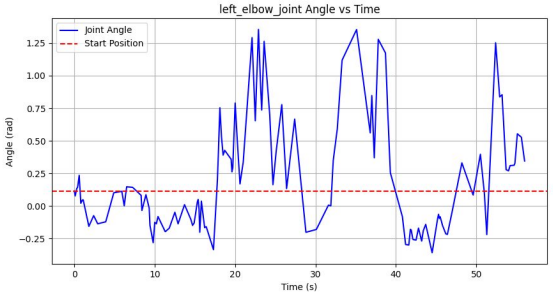
Since last meeting

- Worked on Forward Kinematics (as a backup)
- Fix used angles
  - Bowen (client) requested output csv to contain 6 dof and we were using 4 dof
  - Updated csv nodes as well as ros custom message
  - Recorded rosbags/demo videos, client requested csv’s

Future:

- Interpolation for Simulation: implement max velocity per joint in simulation similarly to how csv node output functions
- Record new ros bags & test updates

Max’s Work

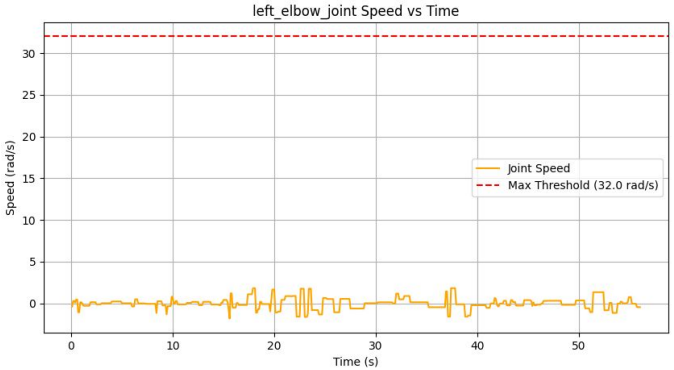


Demo 2

- Get data from robot_angles topic
  - Make a CSV from data which has the joint angles
- Constrain velocity so robot doesn’t move too quickly
- Visualise the angles and speed for joints across time

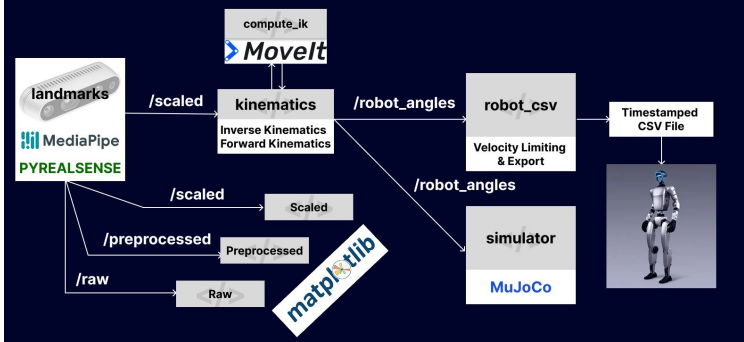
Future

- Fix gitlab runner
- Launch files to run nodes seamlessly
  - 3 different launch files
    - Production
    - Preview
    - Debug
- Move interperpolation to a util file



Zach's Work

- Recent Work
  - Getting the 3 debug graphs working concurrently for testing
  - Rolling average of point data from last 5 frames to smooth motion
  - Preparing documentation for demo2, flowchart & interpolation explanations for the graphs
  - Planning work for the 3rd demo
- Current:
  - Repository Cleanup
    - Removing unused code fragments, function stubs
    - .gitignore for ROSbags and velocity plots
  - Documentation
    - Wiki entries, explanations of system



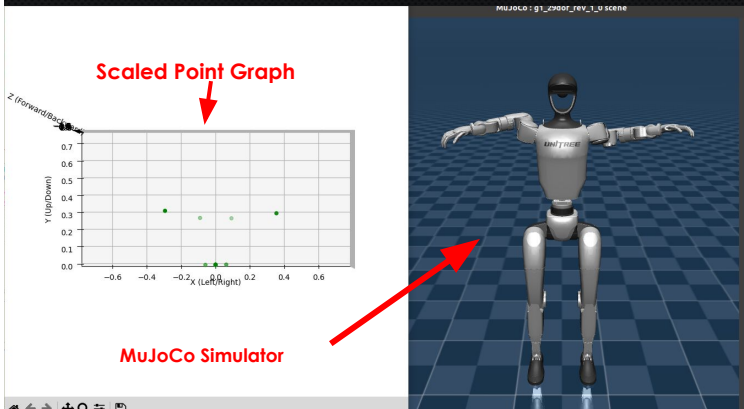
Computed Angles (IK)

Timestamp (seconds)	Motor Angle (degrees)
0.0	0
0.1	2
0.2	10

Output to CSV

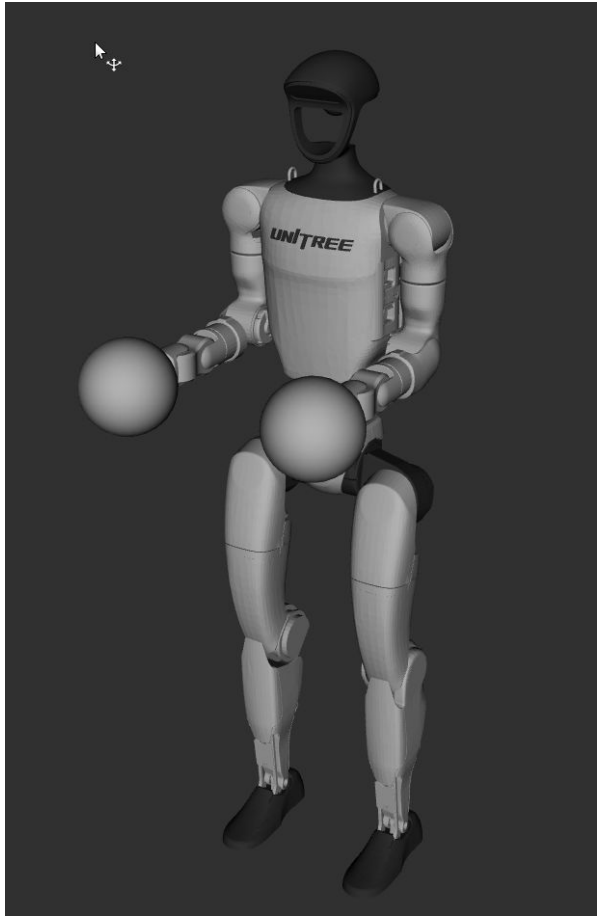
Timestamp (seconds)	Motor Angle (degrees)
0.0	0
0.1	2
0.2	5
0.3	8
0.4	10

In this example, results in interpolated output at t=0.2 and t=0.3!



Isaac’s Work

- Implemented
  - Create debugging graphs
    - ROS scripts
  - Correct collisions for IK. Hand collisons
    - Update URDF
    - Update IK configuration
- Working on
  - Add more safe zones behind the robot and over its head
  - Adding elbows as an end effector in IK



Maxim

- Calibration
  - Arm length finding
  - Statistical outlier detection
  - Scaling plug in
  - ROS node integration
- Z-Scaling
  - Linear
  - Angled
- Website Updates