MEETING NOTES – 06/03/2025

1. Attendance List
   1. Qianyu Hu
   2. Kexin Zhang
   3. Weitao Deng
   4. Yutong Cui,
   5. Dongjian Ma
   6. Mengting Wang
   7. Botong Wen
2. Meeting took place virtually (on Teams) at 5pm on 06/03/2025
3. Team Updates
   1. Control
      1. Moved arm to pick up items on the floor
      2. Collision with the floor causes action to fail
      3. Updated the MoveIt! Configuration for the arm group and the gripper group
   2. Transformation
      1. Updated MoveIt! Configuration to include gripper group and controller type to *position\_controller*.
      2. Planned to get the requirements from the other teams to begin the consolidation of the different parts
   3. Detection
      1. Modelling different item types and poses in MoveIt!
      2. >1000 dataset for training the detection model
   4. Motion Planning
      1. Tested arm movement to different configurations
      2. Applying score algorithm for object picking
      3. OMPL planner and Cartesian path planning for optimizing path planning
      4. Parameter tuning to improve planning performance (e.g. number of planning attempts)
4. Advice Received from Dr Shan Luo
   1. Detection
      1. Add graphs to show model performance after training is completed
      2. Show output/demo of item detection using the trained model
      3. Use any version of YOLO that works best
   2. Consolidate all components of the project to begin to test the functionality
5. Decisions
   1. Control
      1. Communicate with the transformation team to get accurate pose information for grasping location
      2. Complete a successful grasp action using MoveIt!
   2. Transformation
      1. Get the output specification from the detection team
      2. Get the requirements from the motion planning, control, and detection teams
   3. Detection
      1. Use a more recent version of YOLO
      2. Retrain the model and generate graphs to show the performance of the model
   4. Motion Planning
      1. Add constraints to the joint angles to avoid dangerous configurations
      2. Continue experimenting with parameter tuning to improve path planning performance
6. Actions
   1. Control
      1. Resolve error when controlling arm to pick up items in Gazebo
      2. Get grasp pose transformation and incorporate it into control algorithm
   2. Transformation
      1. Create node to subscribe to the channel the detection team publishes the item info to and publish to /*tf* and /*tf\_static* important transformations. Also create service to get the grasp pose given the item’s position
   3. Detection
      1. Add training graphs to better visualize the performance of the detection model
   4. Motion Planning
      1. Add constraints to the joint angles to avoid dangerous configurations
      2. Continue experimenting with parameter tuning to improve path planning performance