

Seventh Meeting Note

1. Attendance list (who attended, and who did not, and for what reason?)

Oluwatimilehin Tijani, Qianyu Hu, Kexin Zhang, Weitao Deng, Yutong Cui, Dongjian Ma, Mengting Wang

Botong Wen(absence): attending employment test

2. Date, time and place for the meeting

Thursday 16:00-17:00, February 6, 2025, Online Meeting

3. Report on the preparations (what issues, questions and challenges were brought up?)

(1) Control: Discussed optimizing PID control parameters for robotic arm joints to improve precision.

(2) Transformation: Reported progress on TF coordinate transformations (both static and dynamic).

(3) Detection: Highlighted challenges with YOLO model training for object detection, including low accuracy and bounding box errors.

(4) Motion planning: Reviewed the integration of the Moveit motion planning tool, with a focus on planning algorithm selection and trajectory optimization under competition constraints.

4. Advice that you received

(1) PID Optimization: Suggested testing existing PID control tutorials or using previous teams' code to avoid starting from scratch.

(2) TF Transformations: Recommended visualizing transformations in RViz to validate results.

(3) Object Detection: Advised optimizing YOLO model learning rate and plotting training curves to clarify outcomes.

(4) Motion Planning: Suggested testing various planning algorithms (e.g., RRT, PRM) in Moveit and optimizing trajectory planning considering competition constraints.

5. Decisions that were made

(1) Test existing PID control examples and present results.

(2) Visualize static and dynamic TF transformations in RViz to confirm accuracy.

(3) Adjust object detection parameters to improve YOLO model accuracy.

(4) Evaluate different motion planning algorithms and optimize trajectory planning for competition.

6. Actions that were agreed on

(1) Demonstrate the results of PID control implementation.

(2) Present coordinate transformation results in RViz.

(3) Plot YOLO model training and validation curves.

(4) Compare the performance of different motion planning algorithms.