

KUKA Cricket Star

Project Weekly Report 05

EN.503.707 Robot System Programming

Spring 2020

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1 Trajectory Prediction

progress:

1. Have tried many strategies to send the target for hitting, e.g. to calculate the estimated target positions and velocities of the ball after hardcoded time in seconds, to calculate the estimated target positions and velocities of the ball when the ball arrives some height, etc.

future work:

1. Need to think of other better strategies to send the target information, e.g. to send the trajectory points within the reachable range of the robot arm, and let the robot arm to reversely reach each of the trajectory points (this strategy might be able to release our need of an accurate timing control).

2 Robot Arm Control

progress:

1. Have tried many preparation poses of the robot arm, and have tried many ways to process the target information to get more precise reaction.

future work:

1. Currently the robot arm cannot accurately to hit the ball, and this is due to the low motion of the robot arm. Need to think of a better strategy to deal with this (e.g. to accelerate the motion planning, or to improve the velocity control).

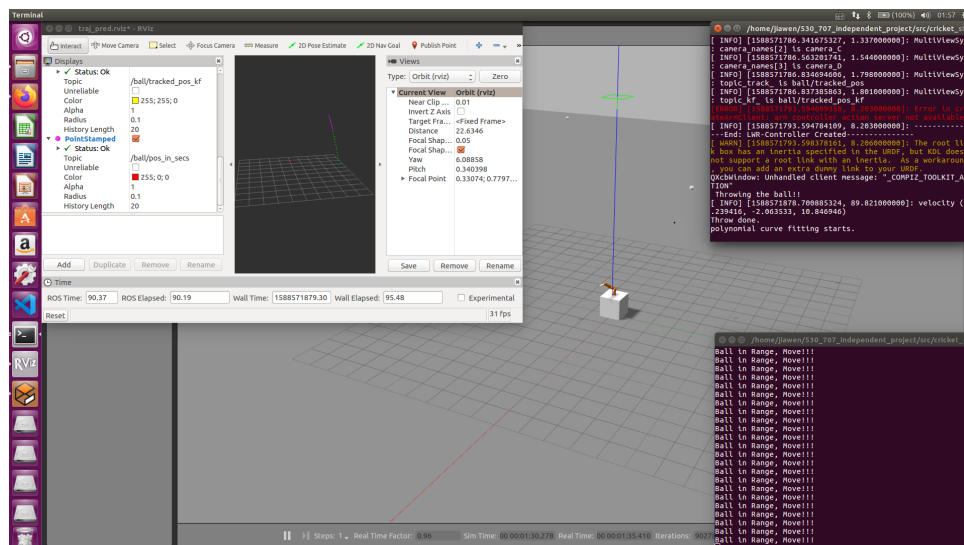


Figure 1: Screenshot when running the whole "KUKA Cricket Star" project pipeline.

3 Cricket Star Master

progress:

1. Added another package to integrate all the parts together by well organized launch files. Ran and tested the whole project pipeline, and cleaned some codes.

future work:

1. Some nodes will get conflict if run in a single launch file (currently have to open two terminals), so we need to better integrate them together for better convenience to run. Plan to continue cleaning codes to make source files well organized.

4 Cricket Star Master

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5 Summary

The robot arm currently misses the ball at times, and the hitting action is more like to wait the ball to arrive rather than to hit against the ball with force. We need to run more experiments and finally get better performance before the final submission.