KUKA Cricket Star

Project Weekly Report 01
EN.503.707 Robot System Programming
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1 Ball Throwing

progress: The "ball_throwing" package for interactively throw the ball in Gazebo is basically completed.

1. We created a "ball.sdf" file to store a blue ball model to render in gazebo.
2. By running this node, we can initially set the ball or reset the ball to a specific location by pressing "b" key, and simulate to throw the ball by pressing "Space" key to send velocities.
3. The testing has already passed. The node can work properly as we desire.

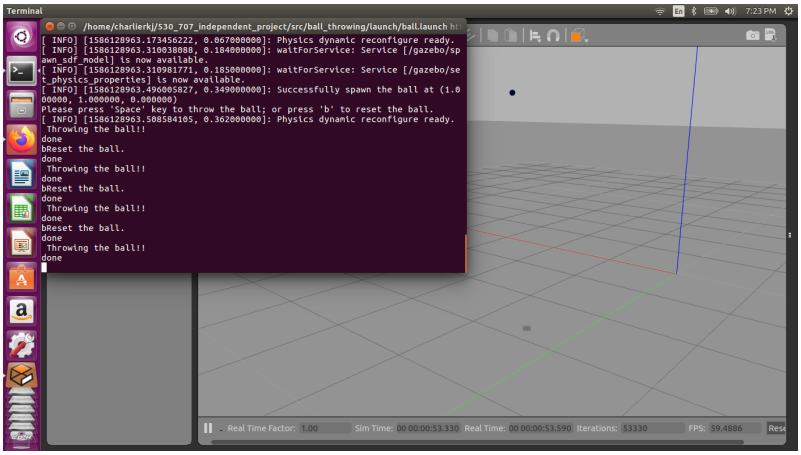

Figure 1: Screenshot when running ball_throwing node.

future work:

1. Need to later modify the parameters (shape, physics, etc) in ball.sdf model to get more realistic simulation.
2. With more experiments later, need to tune the parameters for sending ball velocities to get more desirable trajectories.

2 Camera Settings

progress: Created a camera_setting package for launching camera models in gazebo.

1. We created a "camera.xacro" file to define gazebo plugin camera model with specific names, topic names and other parameters.

2. We also created a "camera.urdf.xacro" file to instantiate 4 camera models with specific position and pose.

3. Start to implement the "Camera" and "MultiViewSys" classes to obtain the camera projection matrices and do the tracking task.

future work:

1. Modify camera position and pose to fit ball tracking operation.

2. Complete the implementation for "Camera" and "MultiViewSys" classes.

3 KUKA Robot

progress:

1. Design the cricket bat model in URDF and attach it onto the robot arm.

2. Test LWR's built-in controllers. (eg joint trajectory controller, etc.)

3. Start to build an inverse kinematics controller for LWR.

future work:

1. Finish and test the IK controller.

2. Write a process control node.