Cartesian Motions for Robotic Arm

Objective

Achieve smooth motions in cartesian plane for the end effector of a 6 dof robotic arm.

Task Details

- Select ur10e or Fanuc crx-10ia/l or any other 6 dof robotic arm with publicly available URDF and setup ROS 2 + Ignition Gazebo sim environment.
- Implement constant-velocity(trapezoidal profile) motion for the end effector moving in a 2D cartesian plane.
- Constant-velocity motion between two/multiple waypoints lying on the same 2D cartesian plane.(Bonus - if more than two waypoints then blend path can be computed)
- Try with different end effector velocities and plot the graphs for joint-velocities also.
- External libraries can be used ex. Moveit2 or KDL or any other.
- Bonus - Implement compliance control to apply constant force to a wall like surface. Assume direct torque control of joints is not available.