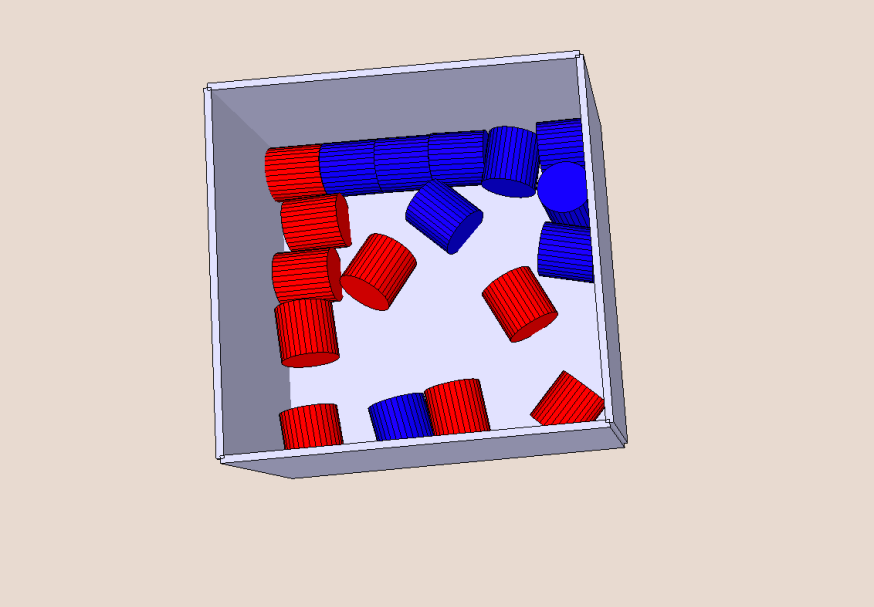
CAP5625 - Introduction to AI
Project 2: Reinforcement Learning for Mixing
Part 1: Environment Setup

In this project, you will develop a Reinforcement Learning agent that can effectively mix two types of objects evenly within a container. Coppelia Simulator will be used to train and test your agent. The goal of this part of the project is to get familiar with the development environment and write simple code to prepare for coding your reinforcement learning algorithms.

The starter codes, the scene and instructions on how to run the code are uploaded on Canvas. Please go through that and make sure that you are able to run the code. Upon successful execution, the simulator will have a scene like the following.



Task:

1. Download and Install Coppelia Simulator. https://www.coppeliarobotics.com/downloads
2. Install Python client for ZeroMQ. https://www.coppeliarobotics.com/helpFiles/en/zmqRemoteApiOverview.htm
3. Modify the code to print object location and take a random action at each time step.
4. Run the simulator first with the scene and then run the python script for 20 steps. Additional instructions are provided in the ReadMe file.

Submission:

Submit a video (40 pts) that shows

- Running your modified script with the scene
- Print out the locations of the objects at each step
- Print out the action taken at each time step

Submit a text file (60pts) that includes

- State space definition and justification (20 pts)
- Action space definition and justification (20 pts)
- Reward function and justification (20 pts)