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Project Title: Mobile Manipulator for Automatic Delivery of Essentials in Hospitals

Objective:

In this project, the purpose is to build a mobile manipulator to collect food and medicines from the dispatch center and deliver them to the hospital cabins. The robot model will be demonstrated in a simulated hospital environment inside the CoppeliaSim software and controlled via a remote API on MATLAB.

Contribution:

I will be working on designing a practical robot that we could build using necessary hardware, and provide a list of materials needed for robot construction. This part will be done by researching available parts in the local market, downloading/designing their corresponding part models and designing the robot structure in Solidworks. After the team members complete the path following and deliverable object detection task, I will work on controlling the manipulator mounted on the mobile robot for picking up designated objects from the dispatch room and placing them on a table after reaching a target destination. This part of the work includes trajectory calculation and motion control of a robot arm (a target location will be provided and the robot will calculate the joint angles via inverse kinematics to reach that target location, move the joints to the desired angles over time, grip on the object, and go back to a neutral position allowing the mobile unit to travel to a destination)