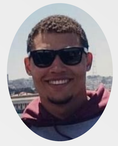
Problem Statement

For our project we are tackling the problem of how hard it is for senior citizens receive their medications in their own home. To resolve this problem, we are creating The Medicine Delivery Robot. This robot will deliver a person's medicine to them wherever they are in their home.

Medicine Delivery Robot

Advisor: Janet Dong





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User Interface

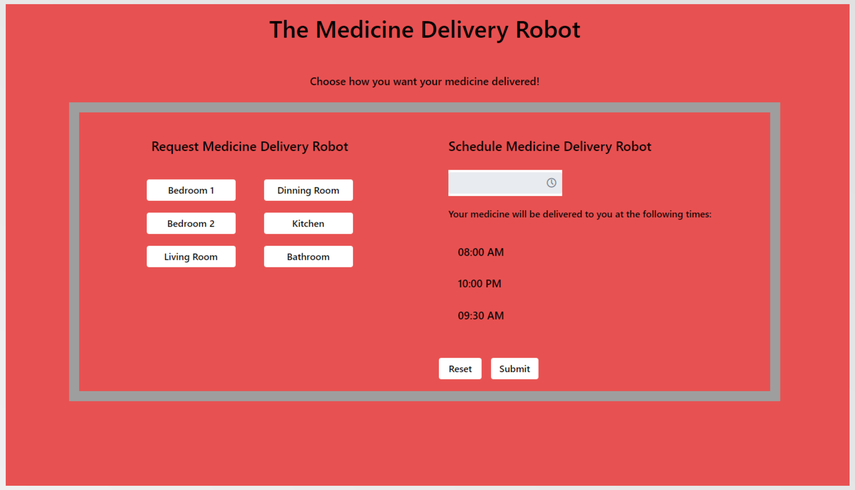

Figure 2: Web Application Home Page

Objectives

- A robot that can navigate a person's home to bring them medication.
- Sensors that allow it to sense objects in its path (ie. Clothes, box, etc.)
- An alarm to alert user of its presence or any problems.
- Waist height so user doesn't have to bend down.
- Intuitive user interface that can be easily navigated.
- Mobility and battery life that allows this to not be an inconvenience.

Design

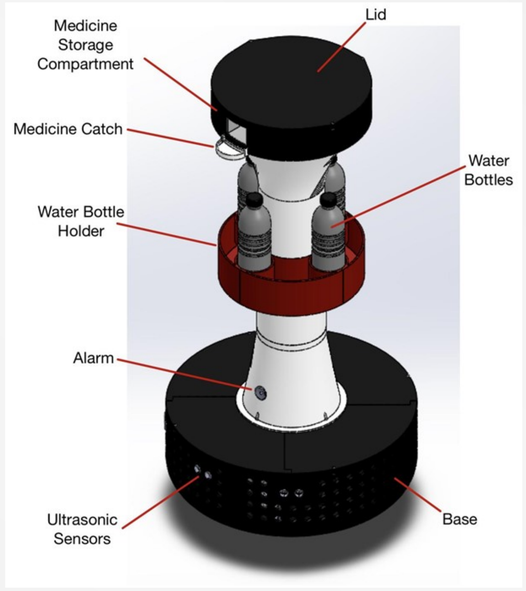

Figure 1: Robot Design Diagram

Development

At its core, the Medicine Delivery Robot is controlled by a Raspberry Pi. When powered on, the Raspberry Pi deploys the web application which allows the user to start the medicine delivery process. It also controls the motors, sensors, alarm, and medicine dispensing mechanism.

Challenges & Accomplishments

- Creating a unique design which accommodates all end user's demands.
- Wiring the hardware items (motor, sensors, alarms) to the Raspberry Pi.
- Programming the robot to be able to avert obstacles during the delivery process.
- Working with 3D print specialist to make the delivery robot as cost effective as possible.

Final Results

Due to the coronavirus, we were not able to complete the construction of our robot. We were, however, able to get each individual aspect operating with our code (sensors, motors, alarm, and medicine dispenser). We were also able to control these aspects via the user interface.

Future Implementations

- Complete the construction of the medicine delivery robot.
- Allow the user to schedule delivery times on the web application so the robot can deliver medicine at the same time(s) each day.
- Improvements to the design of the web application.
- Create automated message system to notify care takers when they need to refill the medicine dispenser.