Medicine Delivery Robot

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.

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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

Final Results

The Medicine Delivery Robot is to be called via the web application to deliver medicine from the home position to the selected room. The robot then dispenses the medicine to the user and is able to return back to the starting location while avoiding any obstacles along the way.

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.
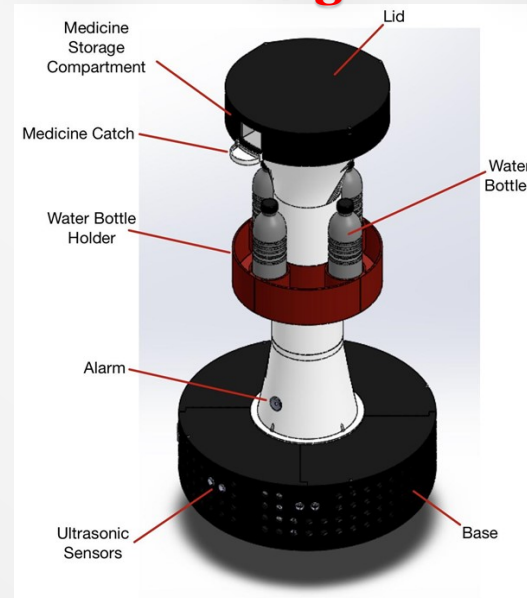
Challenges & Accomplishments

- 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.
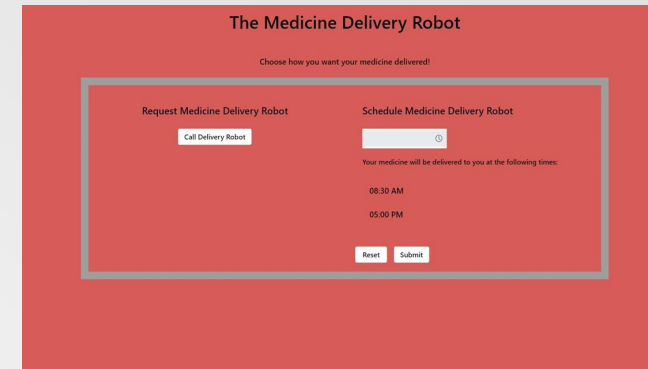- Working with 3D print specialist to make the delivery robot as cost effective as possible.

Future Implementations

- 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.
- Allow robot to use AI to learn the floor plans of a new house for a much simpler setup process.