

Cohen Mayo, Connor Sinclair, Josie Salazar, Malek Gomaa

Master Project: Milestone 1

Description:

Chest apparatus that has a camera to identify objects via AI. Ultrasonic sensors to detect object distance and calculate motion (if applicable). Button to prompt AI to identify objects. Vibrator to alert users for potential harms. Easy clip on system for simple and efficient attachment to user body. Speaker for alerting users of potent harms/dangers. The speaker will also give an audible description of objects that it identifies.

Requirements

F1. Give a description of a nearby object when requested by the user.

F2. Identify nearby objects both moving and non-moving.

F3. Identify nearby people and/or animals.

F4. Identify potential harmful objects and alert the user when in proximity.

P1. It should accurately 100% be able to identify the difference between people and objects.

P2. Safely identifies harmful objects and alerts the user in front of them (i.e. sharp objects, holes, fire, etc.).

P3. Should be portable.

C1. Non-Invasive

C2. Ensure the well being of the users.

C3. Technology Framework

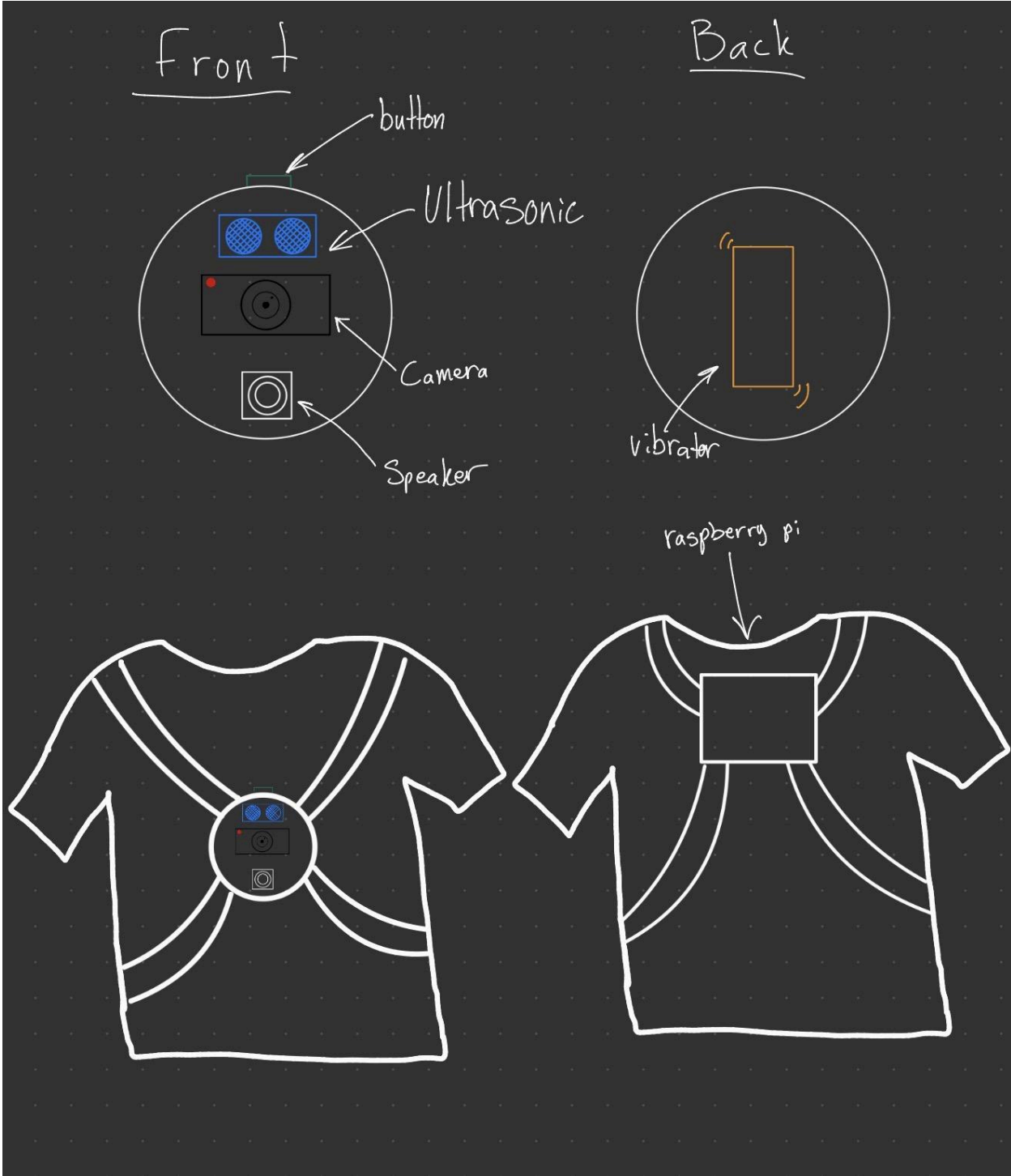
C4. Personal product

C5. Python interface included

Sensors	
Button sensor	Manual activation of object detection function.
Ultrasonic sensor	Detects distance between user and identified object.
Speaker	Gives audible description of identified objects and generates loud sound when user is too close to dangerous objects.
Camera	Identifies objects for the user to be able to navigate safely.
Buzzer/vibrator	Buzzes at exponential rate based on user distance from dangerous objects, starting at a light buzz to an aggressive buzz as user gets

Sensors	
	closer.

Sketch:



Use Cases:

- Prevent walking into dangerous objects and/or obstacles (holes, flames, sharp objects etc.)
 - Buzz if user is a safe distance from something (a few meters from an open flame)
 - Loud beep if user is close to a danger (a foot or two from a deep hole)
- Identify objects such as appliances, tools, etc.
 - Describe objects with liquid.
 - Describe landscape.
 - Describe appliances and their button functions
- Differentiate objects that are stationary and objects that are moving such as cars and animals from bricks and sticks
 - Motion sensor reads distance of car at two points to tell if it is moving or not
- Higher degree of comfort/ease of use comparative to canes/other alternative products.
- Is portable to use everyday.