![BU College of Engineering, Boston University]

Boston University
Electrical & Computer Engineering
EC463 Capstone Senior Design Project

Test Report

Visually Impaired AI Wearable

By

Team #32
Mimir

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Required Materials
Hardware:
- Raspberry Pi 5
- Raspberry Pi Camera
- Raspberry Pi Fan
- Bluetooth Connected Speaker
- 3D Printed Chassis

Software:
- Python
- Server

Set Up
The equipment and setup are divided into 2 parts: the device with the Raspberry Pi with the camera and the laptop.

Raspberry Pi:

- Download the Raspberry Pi Imager tool from the official website: Raspberry Pi OS.
- Use the Imager to flash the Raspberry Pi OS (choose the desktop version if you need a GUI) onto a microSD card.
- Insert the microSD card into the Raspberry Pi and power it up.
- Connect to BU (Unencrypted) WiFi
- Attach the camera to the Raspberry Pi's camera port.
- Set up Bluetooth
- Download required libraries

Laptop:

- Install Docker and Pull Ollama Container
- Run Ollama Container
- Download the Llama3.2-Vision Models
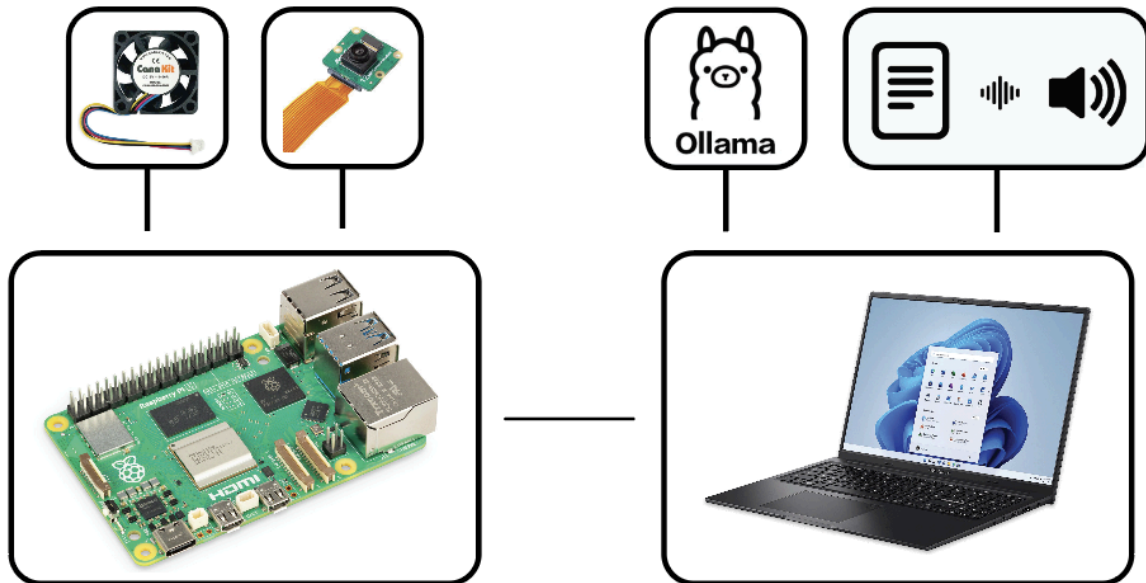
Pre-testing Setup Procedure:
Raspberry Pi side:
Set up device to be ready to take a photo
Create script to take the photo

Laptop Side:
Run Ollama llava

IMAGE:

Testing Procedure:
1. Run the Llama3.2-Vision Models
2. Set up device onto table
3. Hold item in front of camera and run the script to take an image
4. Upload it to Google Drive
5. Download image locally from Drive
6. Run Llama locally.
7. Use the pre-set prompt "Describe the the item, no need to be accurate in xxxxxxxxx" (where xxxxxxx is the path of the image file)
8. Get the result of the model

Measurable Criteria:
The criteria for successful running and output is as follows:
1. Raspberry Pi should successfully capture an image
2. The image is properly processed by LlaMa
3. We get an description of the item

4. For success, we want the llama to accurately describe the general contents of the image even if it isn't accurate in terms of text.

Score Sheet:

Object	Category	Correct? (Y/N)
Pasta Label	Food Label	<u>Y</u>
Madeline Label	Food Label	<u>Y</u>
Foundation Bottle	Bottle	<u>Y</u>
Onion Powder	Bottle	<u>Y</u>
Check	Document	<u>Y</u>
Jury Duty	Document	<u>Y</u>