Smart Pantry System

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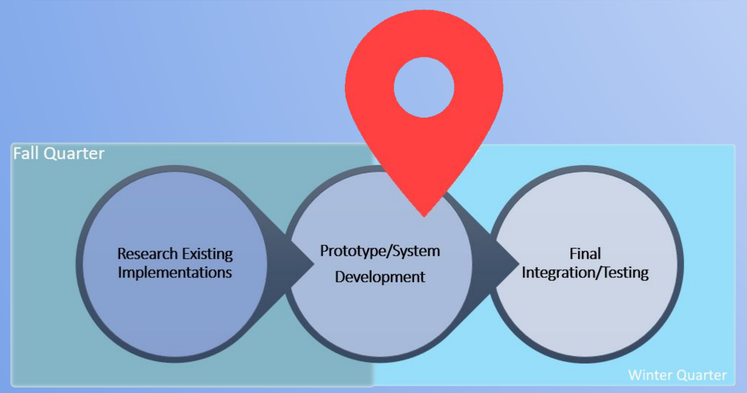
Background

Consumers often purchase items at the grocery market that they already have at home. This unchecked habit contributes to the 2.2 billion tons of food waste done by humans annually according to the Food and Agriculture Organization (1). We offer a system to the private home sector to cut down overshopping and promote a conscious shopping mindset.

Objective

Create a smart pantry solution that automatically tracks purchased goods upon storage to encourage better consumer shopping decisions and help minimize food waste.

Timeline



Next Steps

- Train Machine Learning Model
- Front/Back End App Development
- Full Integration

System Flow

Resources

- Raspberry Pi 4
- Raspberry Pi Camera Module V2
- PIR Motion Sensor
- OpenCV2 | Tensorflow
- Google Cloud Vision (GCV)

Milestones

- **Finalized our product name parsing algorithm**
- **Upgraded hardware to Raspberry Pi 4 Model B**
- **Started on front-end app development**
- **We made a change to our object detection algorithm and started using machine learning**
- **Successfully trained the machine learning model to detects bottles, sugar, and jars**
- **Acquire training data at proper angles to support common pantry items**
- **Develop a web host to communicate with the back end of the app.**
- **Write enough of the backend to render the integration loop testable.**

References

[1] Hsu, C., Liao, H., Hsiu, P., Lin, Y., Shih, C., Kuo, T. and Liu, J. (2006). Smart Pantries for Homes. In: *2006 IEEE International Conference on Systems, Man and Cybernetics*. [online] IEEE, pp.4276-4283. Available at: https://ieeexplore.ieee.org/document/4274571.
[2] A. Javed, K. Kanwar, M. Legrand, N. Miller, and S. Scherl, "Development of an Internet of Things (IoT) Enabled Household," *Development of an Internet of Things (IoT) Enabled Household*, 22-Jul-2016. [Online]. Available: https://pdfs.semanticscholar.org/1273/b6a2f204df1ab6faf475dfb736650904ac59.pdf. [Accessed: 04-Oct-2019].

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