

BoxTrack

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BoxTrack is an inventory management device that enables a user to track their consumption of objects from a physical container.

A Raspberry Pi (RPI) is affixed to the lid of a container. Events, such as open and closing, are logged.

The user **inputs** the number of items removed (or added) using a joystick. Warnings are triggered when the container is **empty** or open for a prolonged period.

A **web interface** can be used to track the status of the container. A **dashboard** shows some basic analytics generated over time.

Tools, Technologies and Equipment

- Languages: Python
- IoT platform: ThingSpeak
- Framework (stretch): Flask
- Devices: RPI, Sense HAT
- Sensor: inertial measurement
- Networking: HTTP
- Server automation: systemd
- Programming environment: SSH to NeoVim on Ansible-provisioned RPI

Objective

Requirements

- ☐ Container tracked with orientation sensor
- ☐ User data entry through joystick
- ☐ Capacity indicated with LED array
- ☐ Web interface for monitoring data
- ☐ Reaction sent from IoT platform
- ☐ Reaction or actuation based on sensor data

Stretch goals

- ☐ Custom interface (e.g., flask backend, digital twin with three.js, HTTP API, dashboard with streamlit)
- ☐ Publish website with live data feed

Project Repository

<https://github.com/edibotopic/boxtrack>