Drone + AI

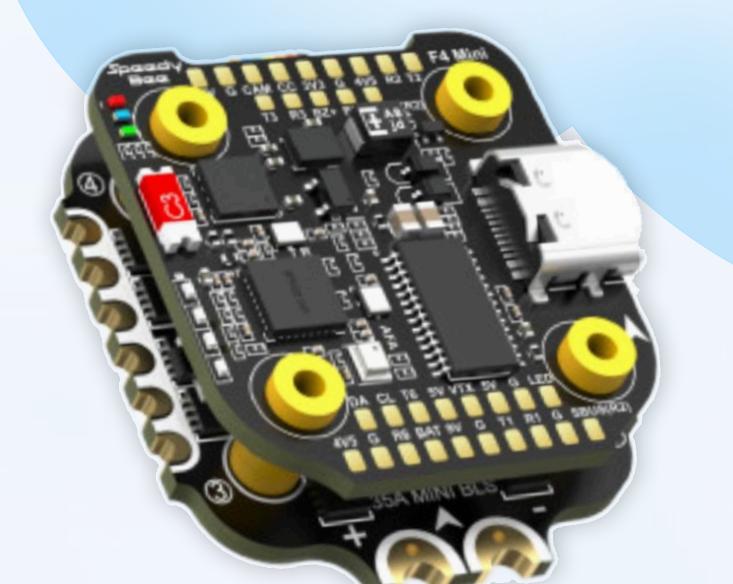
Cloud Chasers



FPV Drone Overview

This FPV (First-Person View) drone is flown manually using a remote controller. A small camera on the front sends a live video feed to FPV goggles, so the pilot sees what the drone sees and can fly from a first-person perspective.

The central component is the flight controller. It keeps the drone stable, reacts to control inputs, and manages the motors. It also connects to other onboard hardware like the Raspberry Pi, making it the "brain" of the flight system.

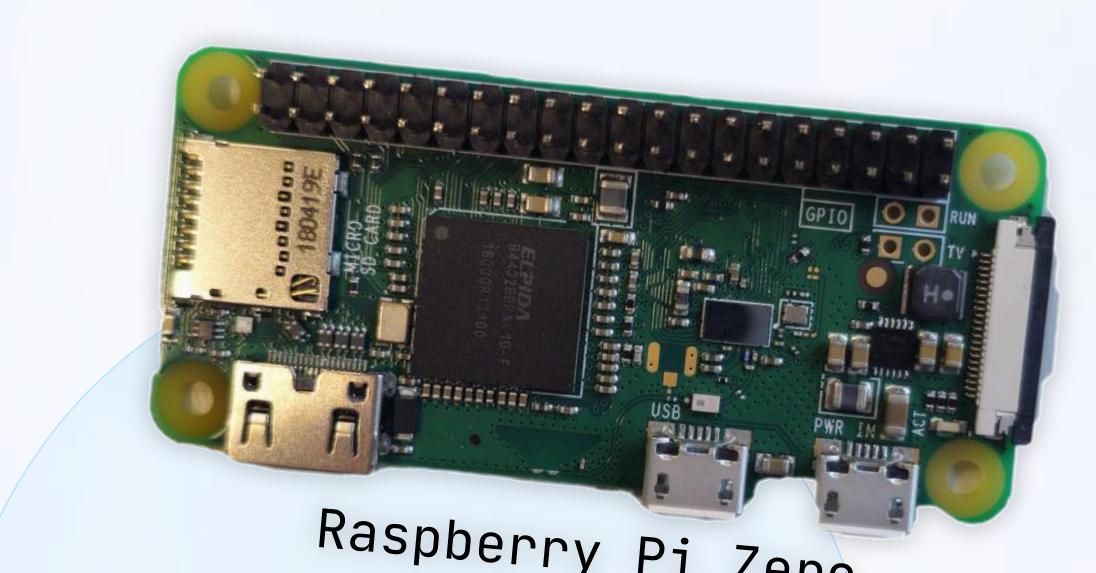


flight controller





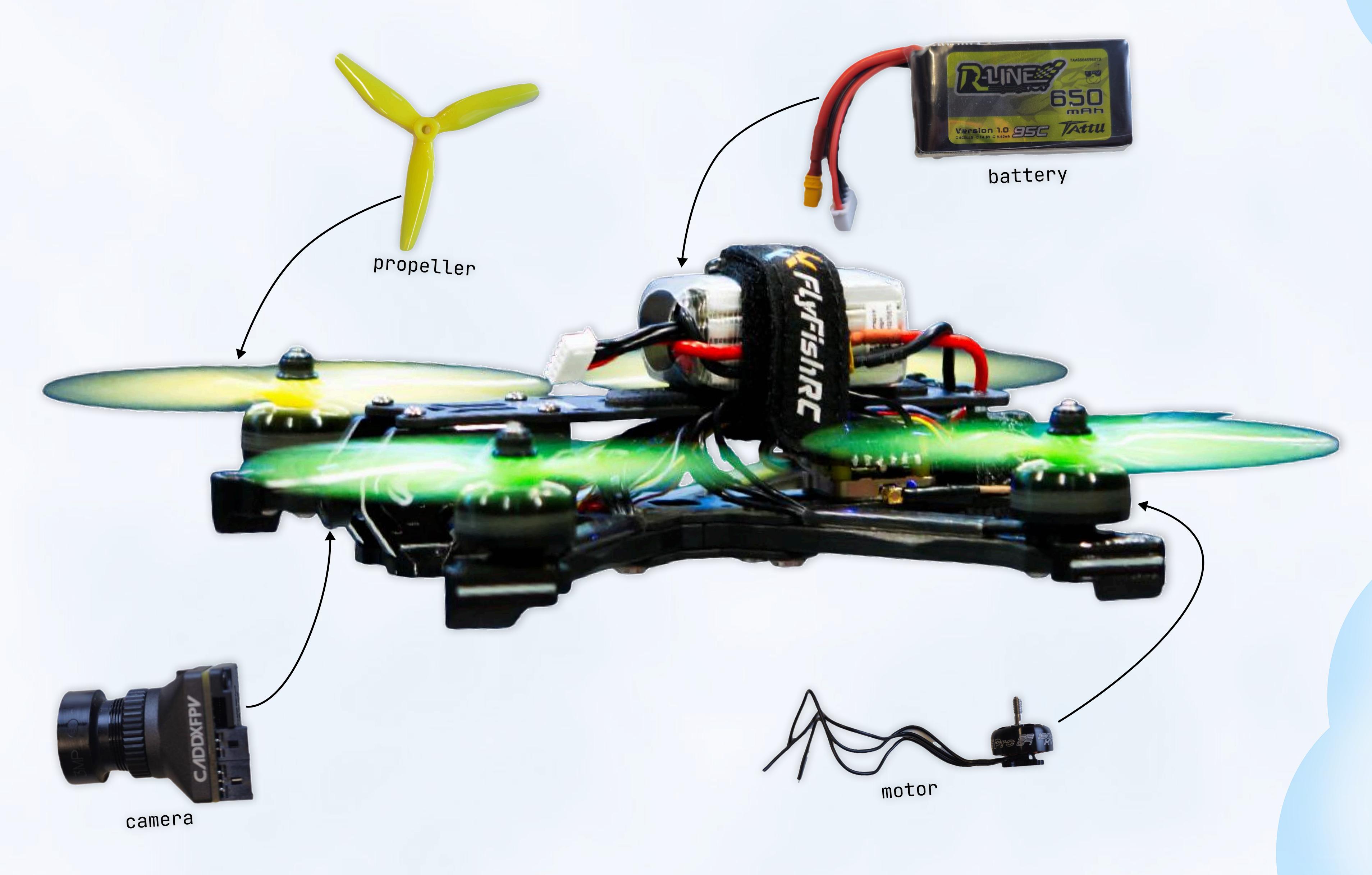




Raspberry Pi as Co-Pilot

Alongside the flight controller, a Raspberry Pi Zero 2W is mounted on the drone. It's connected via a data cable (UART) and can take over parts of the flight control when activated. Using a switch on the remote (AUX3), the pilot can activate one of two modes:

- Stable & Detection Mode: the Raspberry Pi keeps the drone stable in the air while using object detection to scan for red objects. Once a red object is detected, the drone rotates either left or right.
- Forward Mode: the drone slowly flies forward.







A small Pi Camera is connected to the Raspberry Pi and looks straight ahead. With software like OpenCV and TensorFlow Lite, the Pi can recognize colors (like red) and simple objects. A Google Coral USB Accelerator helps speed things up by providing extra processing power for the AI models.

All processing happens directly on the drone. The results are sent over Wi-Fi to a mobile app, so you can see what the drone is detecting while it's flying.

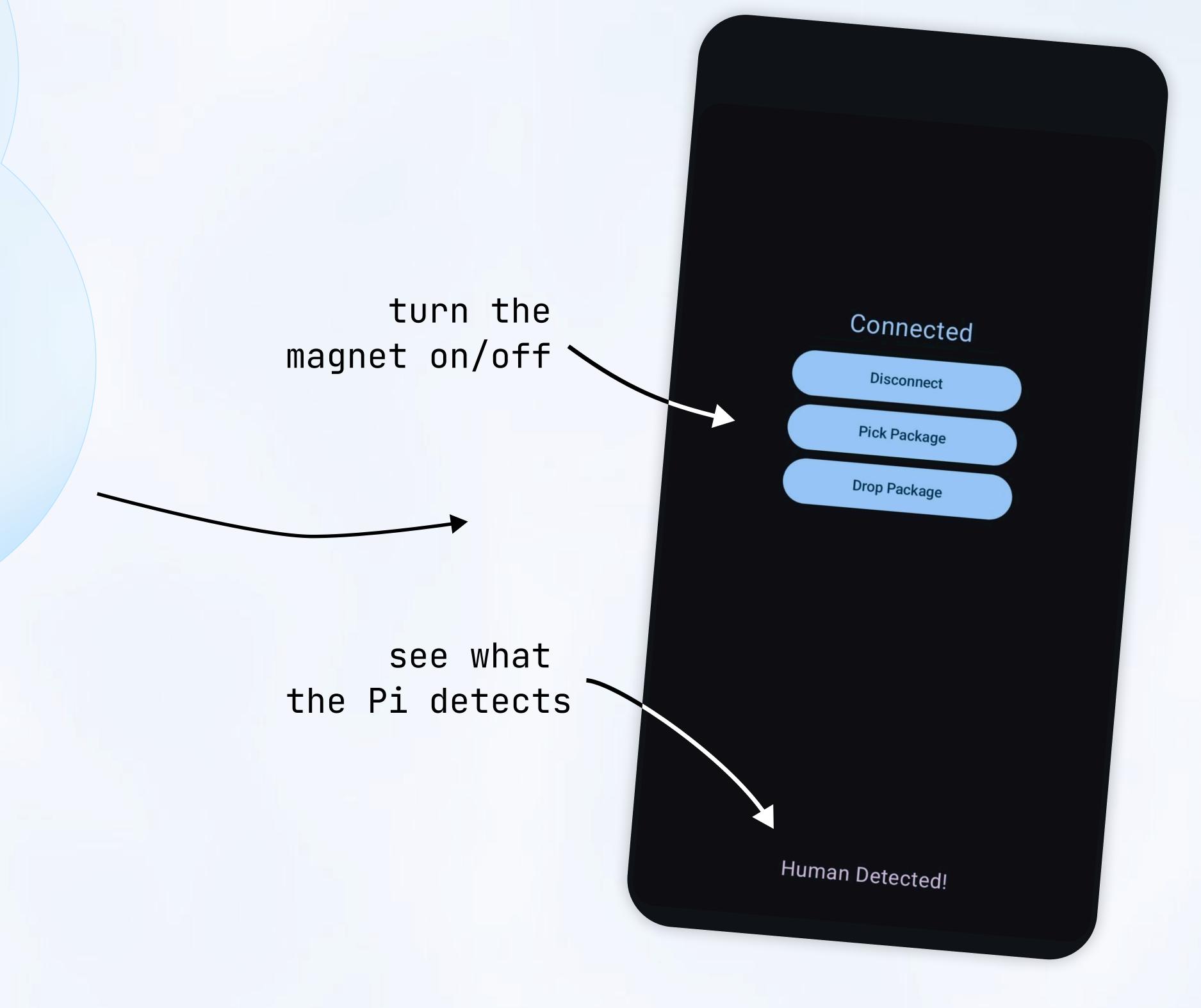


Pi Camera

Packet Transportation

The drone can also carry small packages. A 5V electromagnet is mounted underneath and controlled by the Raspberry Pi using a relay on GPIO 11.

If the magnet is turned on while the drone is above a package with a metal plate, it picks it up. When the magnet is turned off — either through the app or the remote — it drops the package again.





Link to the Documentation