

Drones For Humanity

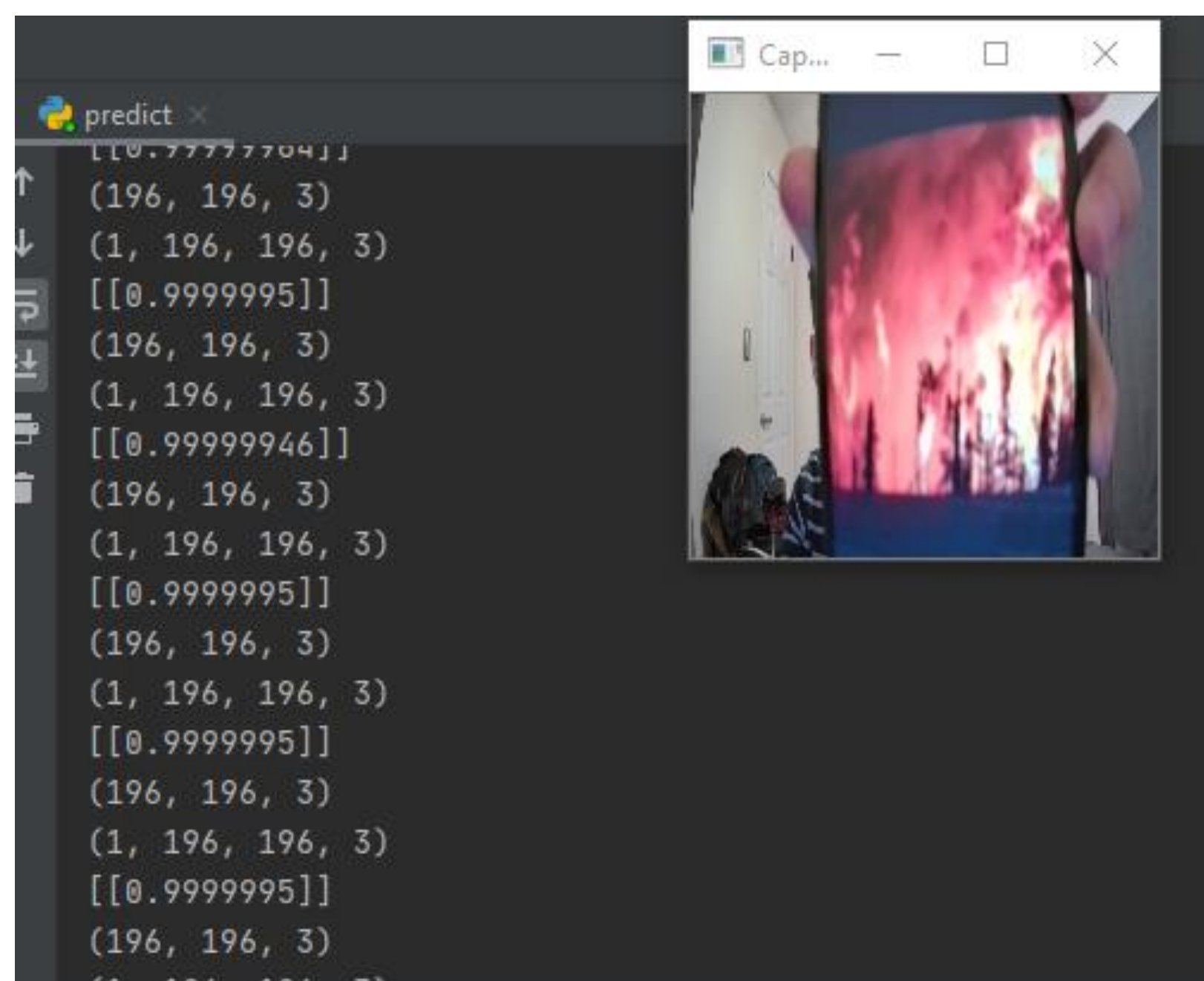
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Overview

The Pink Panther fixed-wing UAV is designed for high-speed aerial surveying. The aircraft can detect wildfires and alert flight personnel to a fires location.

Propulsion

Twin motors provide the aircraft with XXX Newtons of thrust during cruise at 25m/s. With a 22000mah battery, the aircraft is capable of a 30-minute flight time.

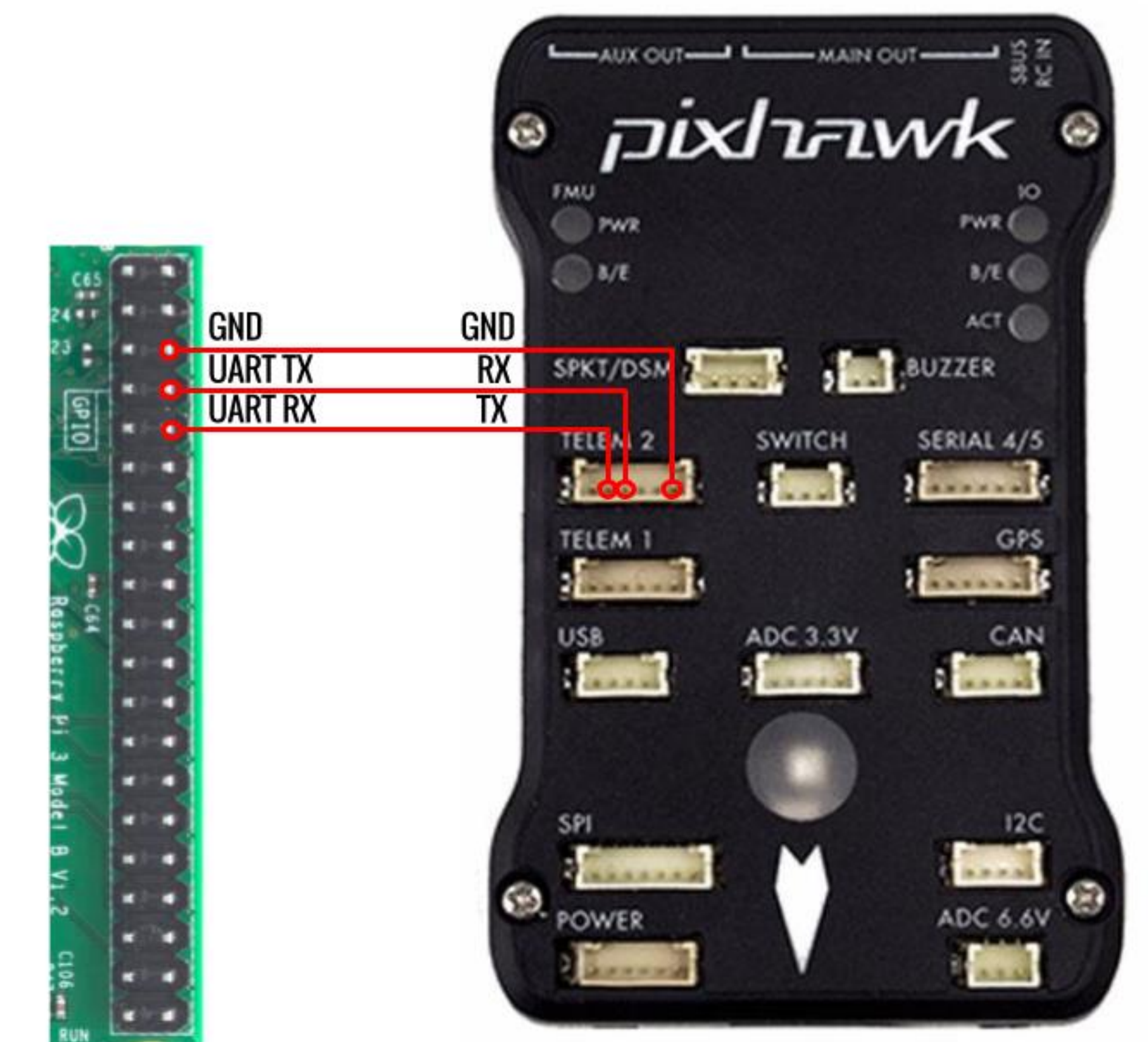


Payload

- Designed to droppable and stationary payloads
- Maximum payload mass of 2.3 kg
- Autonomous or manual deployment
- Camera system for wildfire detection

Avionics

- Uses Pixhawk flight controller for autonomous flight
- Analyzes GPS location for use with wildfire detection system
- Communicates with Raspberry Pi to update flight plan
- Can be quickly switched between manual and autonomous flight in case of an emergency



Aerodynamics

- Stall velocity: 13.9 m/s
- Takeoff velocity: 18 m/s
- Glide ratio: 18.67
- High speed glider
- Takeoff distance: 25 m

Wildfire Detection System

- A camera sends visual information to a neural network to detect wildfires
- The neural network is a convolutional neural network with 6 hidden layers
- The neural network is 98% accurate at identifying fires



Structures

- Structural analysis performed using hand calculations, MATLAB, and ANSYS Workbench
- Maximum takeoff weight of 11.41 kg
- All components designed and manufactured to withstand 1.5 times the expected load

Control Block Diagram

