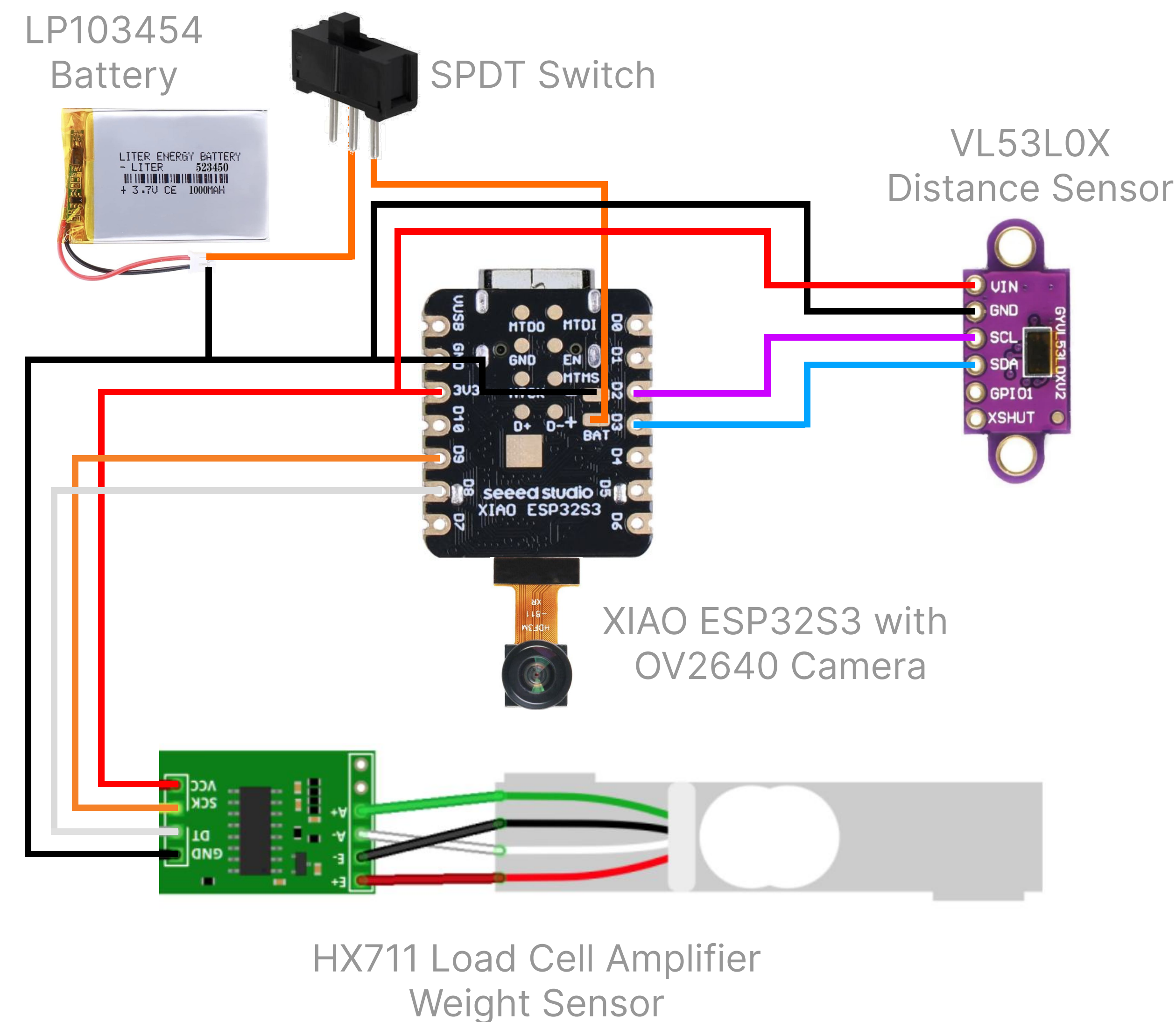


Hardware Architecture



Sensors

VL53L0X Distance Sensor

It detects the approach of a cat; VL53L0X is chosen over the HC-SR04 ultrasonic sensor because it operates at a lower voltage; VL53L0X doesn't require calibration as it measures the distance of light travel; when a cat comes within a certain range, the camera will be activated.

HX711 Load Cell Weight Sensor

Used to get the remaining amount of cat food in the cat house in real time. When the weight is less than a certain value, the web app will prompt a message.

OV2640 Camera

Used to record the environments inside and outside. When an object approaches the cat house, the camera will take a photo, and edge computing and ML will be utilized to identify whether it is a stray cat and which cat it is. In addition, features worth trying include live streaming of stray cats' feeding and activities.