

# **Lifting Weight: programming a drone to support autonomy in agri-tech**

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## **Proposal**

### **Motivation**

The main motivation of this project is to help innovate the agriculture sector to help low-income farmers increase profits and provide consumers with more fresh produce. Smart farming solutions have already been introduced but the main difference with this one is the use of automation to reduce the need for training farmers to fly the drones.

### **Aims**

The aim of the project was to develop a system that would process images of farmland to fly to and take samples. The main aim was to implement this on an autonomous piloting operating system and then use a python script (or something similar) to process the input of the images into an output of coordinate to fly to.

### **Progress**

- Attempted to download Px4 on a Navio implementation of the Raspberry Pi OS
- Attempted to download Px4 on standard Raspberry Pi OS
- Attempted to download Paparazzi GCS on Raspberry Pi board

## **Problems and risks**

### **Problems**

The issue with using open-source projects is that they tend to be poorly maintained, this has been a major problem with my project. The documentation on downloading the OS on a Raspberry Pi doesn't account for the many errors that appear when attempting to download it. There are GitHub forums complaining about the same errors I received but there hasn't been a resolution even after a whole year has passed.

These errors have prevented me from setting up my environment to begin coding, meaning the solution will have to be implemented in isolation the intended OS.

### **Risks**

Future issues may be trying to evaluate the system I have developed thoroughly enough due to developing it outwit the environment it will be used in.

## Plan

### Over the Christmas break

- Look into literary reviews focusing on the methodology of collecting soil samples
- Start implementation of python script
- Compiled lit review and motivation section started

### Semester 2

- **Week 1-3:** Python script implementation near done.
  - o **Deliverable:** Draft lit review and motivation chapters
- **Week 4-6:** End of development
  - o **Deliverable:** Draft methodology chapter, testable python script
- **Week 6 – 8:** Evaluation and Unit tests
  - o **Deliverable:** Draft of results section after evaluation is performed
- **Week 8-10:** Conclusion and finishing off Dissertation
  - o **Deliverable:** Entire Dissertation, first draft of conclusion and discussion section