

# Initial Plan – Drone Forensics Investigation

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Module: CM3203 – One Semester Individual Project

Credits Available: 40

## Project Description

This project will involve researching and investigating various makes and models of UAVs / drones to extract as much information that can be found on the devices. UAVs are becoming more accessible to the general public and their capabilities are improving which creates a need for resources on how to extract important information that could ultimately be used in a forensic investigation.

There are many potential artifacts that can be found on UAVs. These artifacts are created by the components built into the UAV. This includes cameras, GPS, geolocation and connected devices (mobile phone and controllers). Only some of these components should be thoroughly investigated. The data contained in these components can usually all be found on the SD card. By taking a mirror image of the SD card, open-source forensic tools can be used to extract the data / artifacts. The main purpose of the project is to turn the artifacts and data into something readable.

There is access to a large range of data taken from many UAV models. Only a select few models should be investigated as examining all makes and models is not feasible in this time frame. The data provided contains images of the SD cards, hash values, and some controller and mobile data. This is all very valuable data that is needed for this project.

There should be no ethical problems with this project as the UAVs do not contain anyone's personal data. The UAVs were flown in a legal location and the data was collected in order to do this research.

## Project Aims and Objectives

Using open-source forensic tools I will analyse different UAV models and establish the following:

- Identify and highlight any artifacts found through the analysis of the UAV models
- Identify the location where the evidence can be found on
- How the artifacts can help with a UAV crime related investigation

I will focus on extracting some of the following areas:

### GPS

- Initial location
- Final location
- Path taken
- Altitude

### Sensors Data (Camera)

- Image description
- Make and model
- Creation date / time
- Location of UAV when picture is taken

## Connected Devices

- What and how the devices connected to the UAV
- Any data that might be sent from the UAV

## Work Plan

### Week 2 – 3

#### To-do:

- Explore existing research in this field
- Note issues / problems that others have encountered
- Obtain a range of materials that can be helpful towards investigation

### Week 4

#### To-do:

- Meet with supervisor to discuss materials found and initial approach
- Investigate chosen makes and models of UAV images, not focused on obtaining evidence items, simply to view and make sense of what is on the image

#### Milestone:

- Have a better understanding of the data contained on the UAV
  - Write up initial findings and how to proceed from here

### Week 5 – 7

#### To-do:

- Extract evidence items (GPS, sensor, and connectivity data) and put into a clear format that can be used for an investigation
- Meet with supervisor in week 5 if problems occur, otherwise discuss the extracted data at end of week 7

#### Milestone:

- Extract and format all or most of one area described in aims and objectives
  - Write up how data / artifacts were identified, what was done to put them in a readable format and how they can be used for a forensic investigation.

### Week 8 – 9 (Optional)

If the extraction and formatting take longer than expected use these weeks.

If the investigation is done by week 7:

- Write a program to help extract and format the data (If extraction is too complicated focus on the formatting)
- Meet with supervisor to demonstrate progress

### Week 10

- Explore other areas of drone forensics (examples):
  - Mapping GPS coordinates onto a map
  - Other data items that can be found

## Week 11 – 12

Complete report with all research and findings.

## Gantt Chart

Provided as support file “Plan.xlsx”