Worcester Polytechnic Institute
Department of Computer Science

Drone Forensics with Public Data Set

Objectives

- Perform forensics with public drone data set from the CFReDS project.
- Get flight data such as GPS location, time, battery information, error logs, and number of flights.

Task

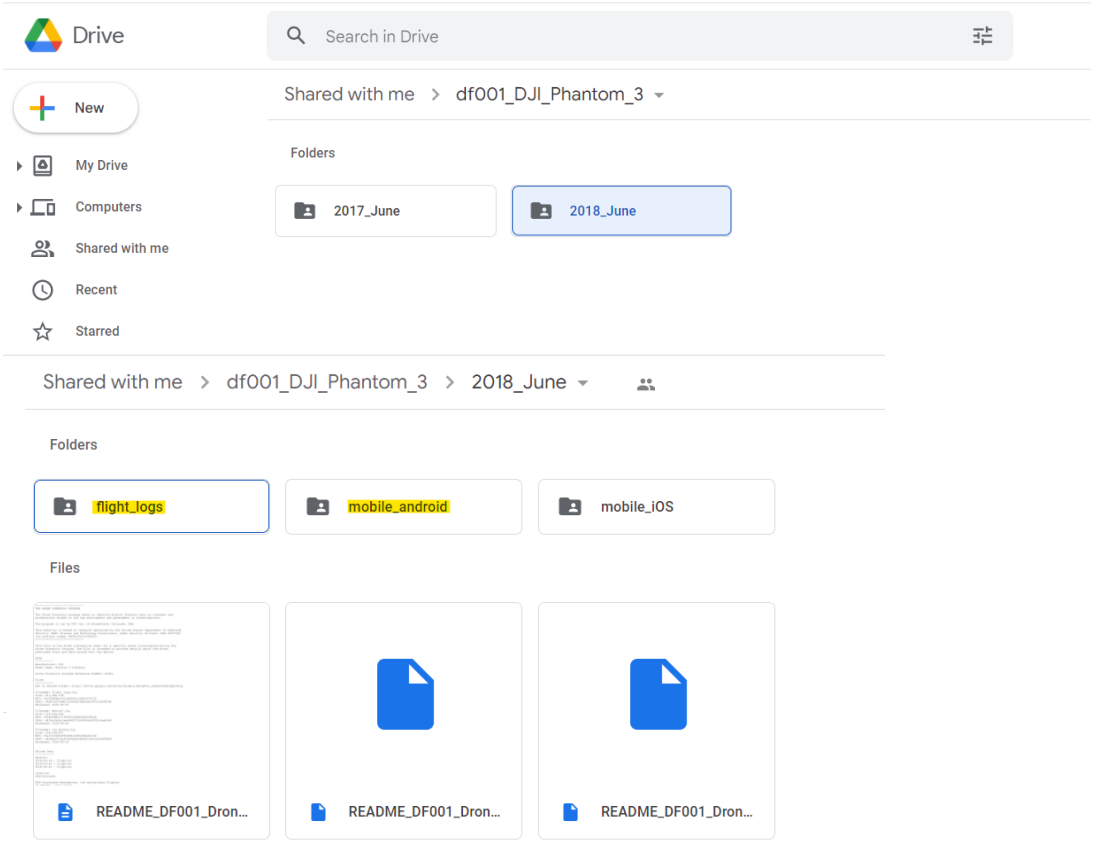
Task 1. Download Software and Data Set

1. Open the CFReDS project website to download the provided public data set. Click DF001 or DF002 or DF003 to download the data set folder. (Please note, in this module, we will only analysis the DJI Phantom 3 model and the data set that this module is using is DF001.) https://cfreds-archive.nist.gov/drone-images.html

Drone Images

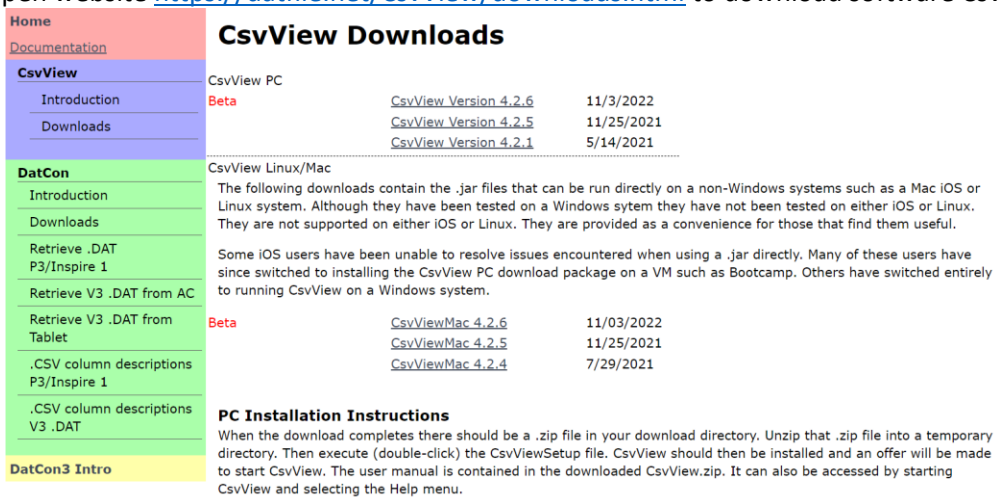
Drone Reference Number	Drone Make	Drone Model
DF001	DJI	Phantom 3
DF002	DJI	Phantom 3
DF003	DJI	Phantom 3

After clicking DF001, you will be directed to a Google drive, click 2018_June folder and download two folders, “flight-logs” and “mobile_android”. Note: Open the mobile_android folder to download the “Media01” folder.



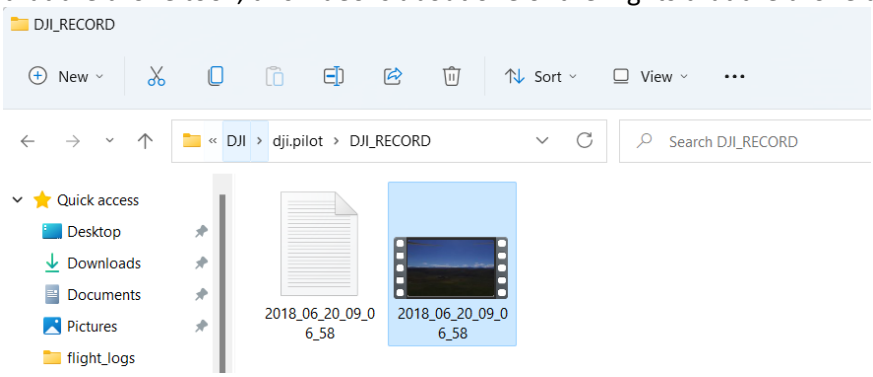
2. Download Software

Open website https://datfile.net/CsvView/downloads.html to download software CsvView.

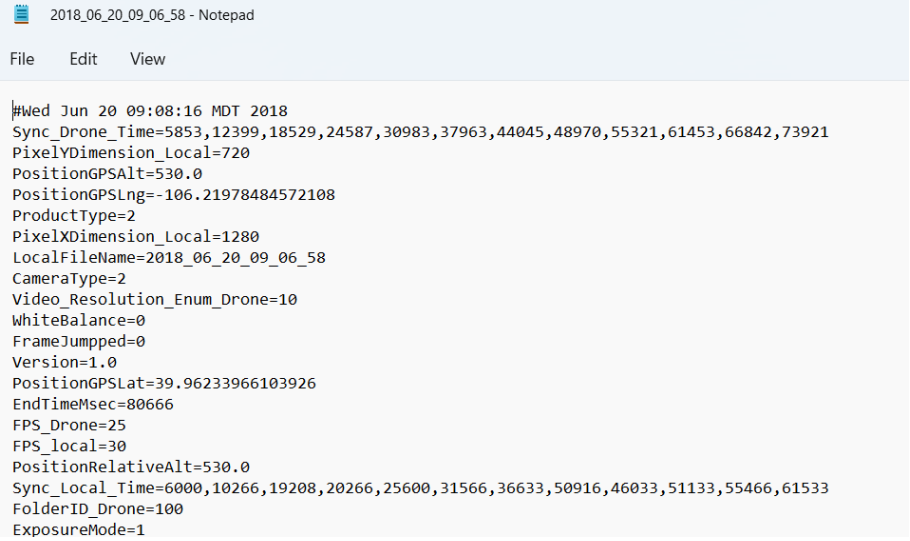


Task 2. Mobile Device Analysis

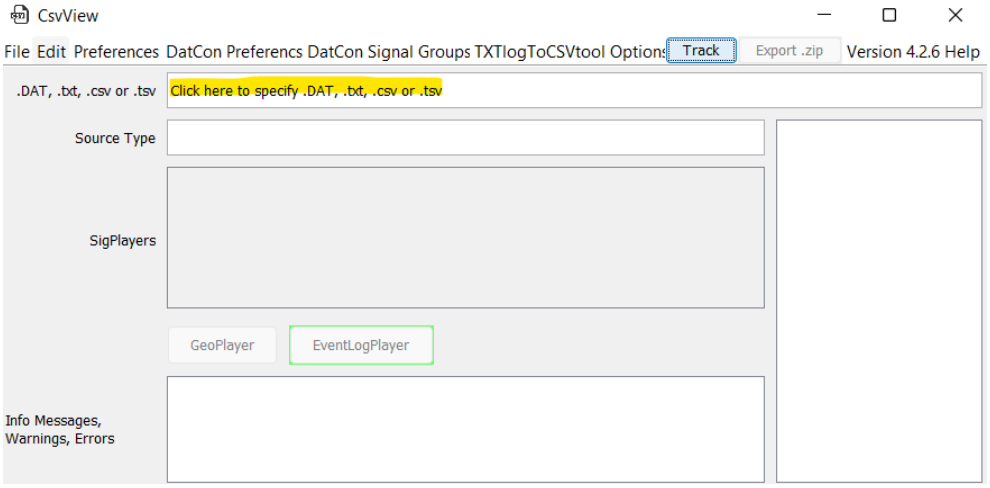
3. Open folder DJI_RECORD (Media01\Media01\sdcard\DJI\dji.pilot\DJI_RECORD), you will see a video that the drone took, this video is about one of the flights that the drone took.



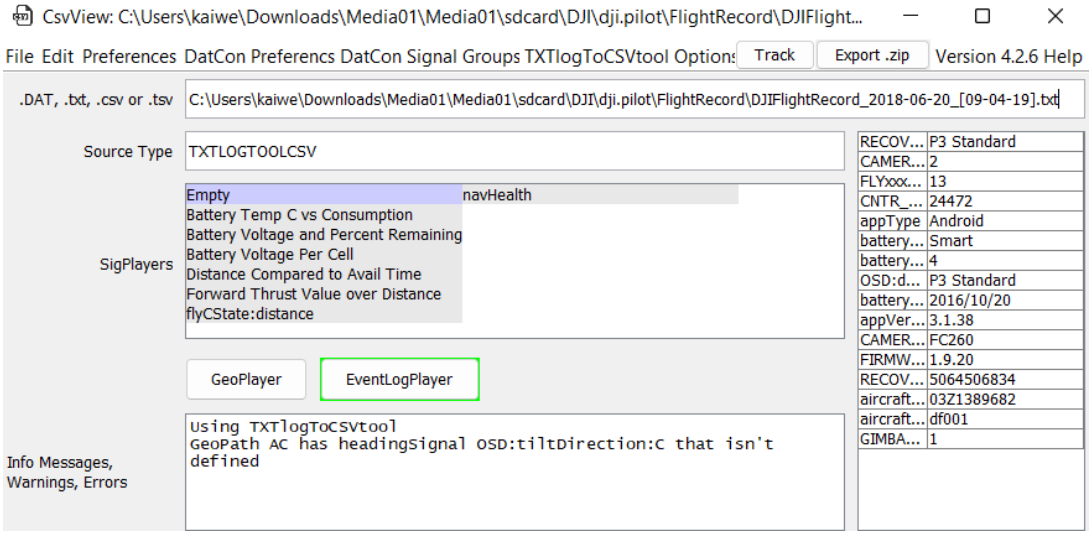
You can also get the information such as date of the flight, drone position, etc. about this flight in the text file that beside this video.



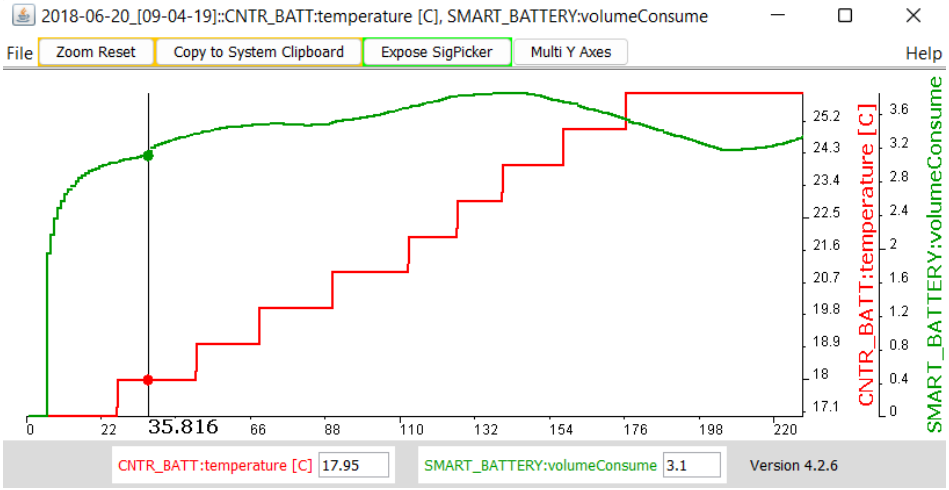
4. Open CsvView, click the highlighted part and choose the file inside the folder FlightRecord (Media01\Media01\sdcard\DJI\dji.pilot\FlightRecord).



Then the information about the drone will appear.

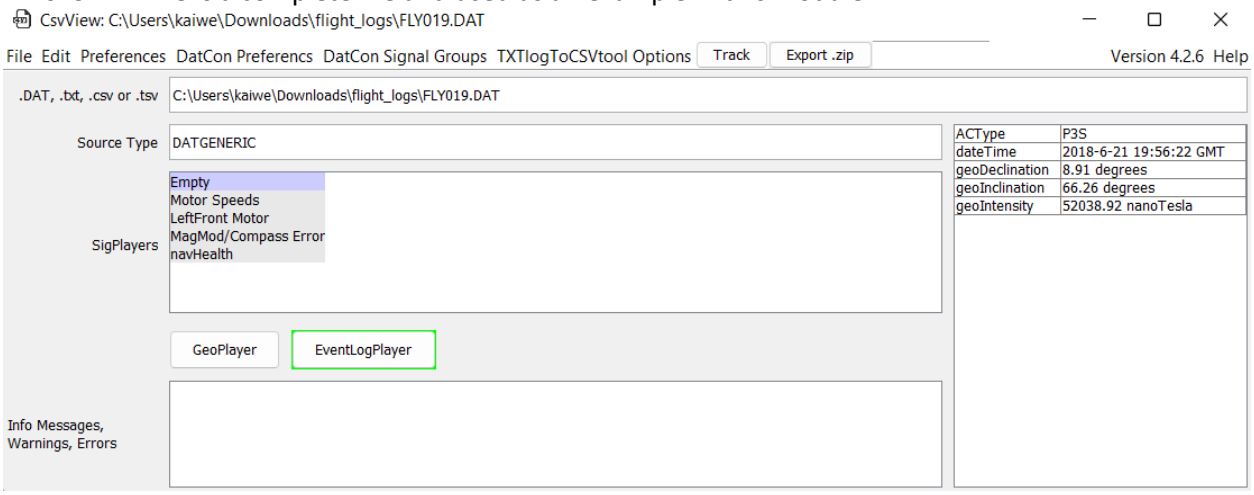


If you click some buttons such as “Battery Temp C vs Consumption”, a graph with the information about the drone appears.



Task 3. Drone Data Analysis

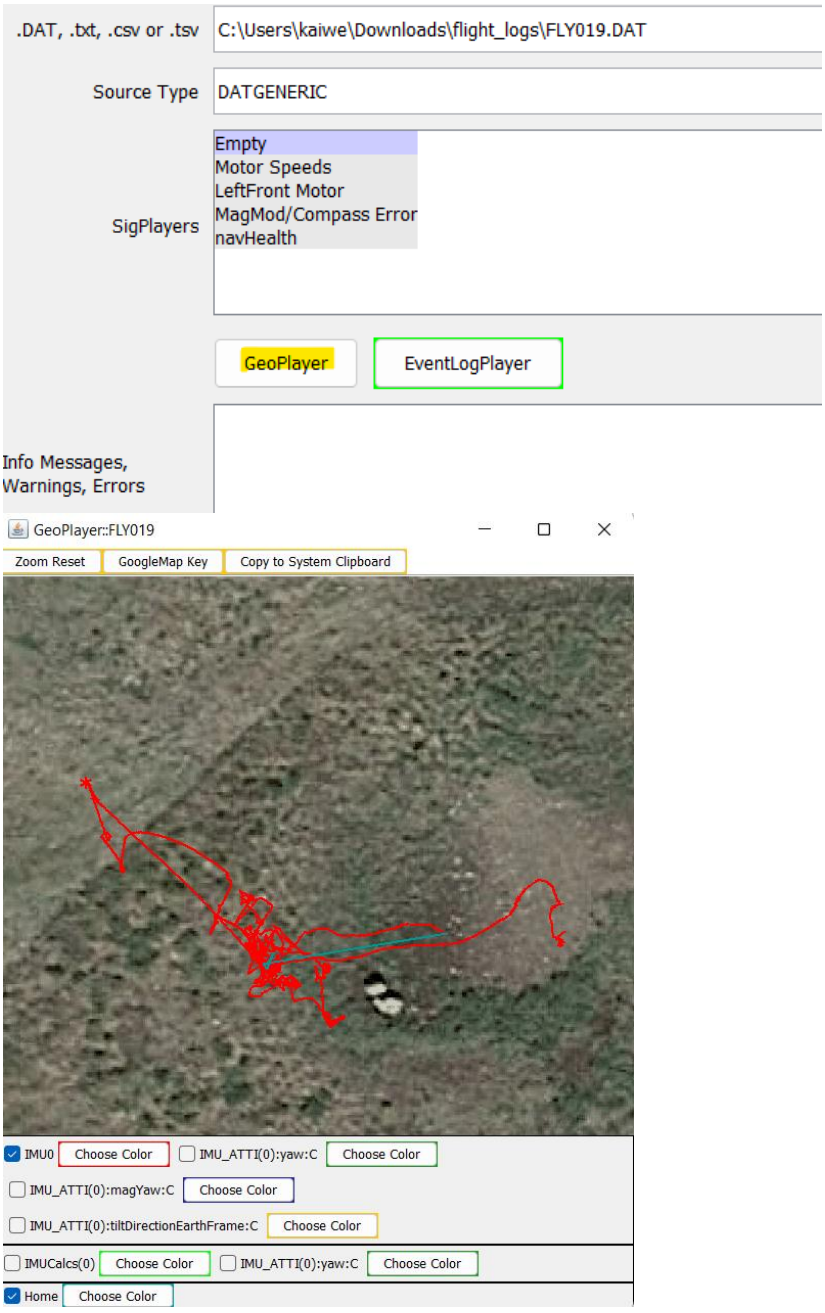
5. Open CsvView, choose the flightlog folder that downloaded before and choose one DAT file to analyze. Please note, since some DAT file is not complete, the analysis result may also not complete, FLY019.DAT file is a complete file and used as an example in this module.



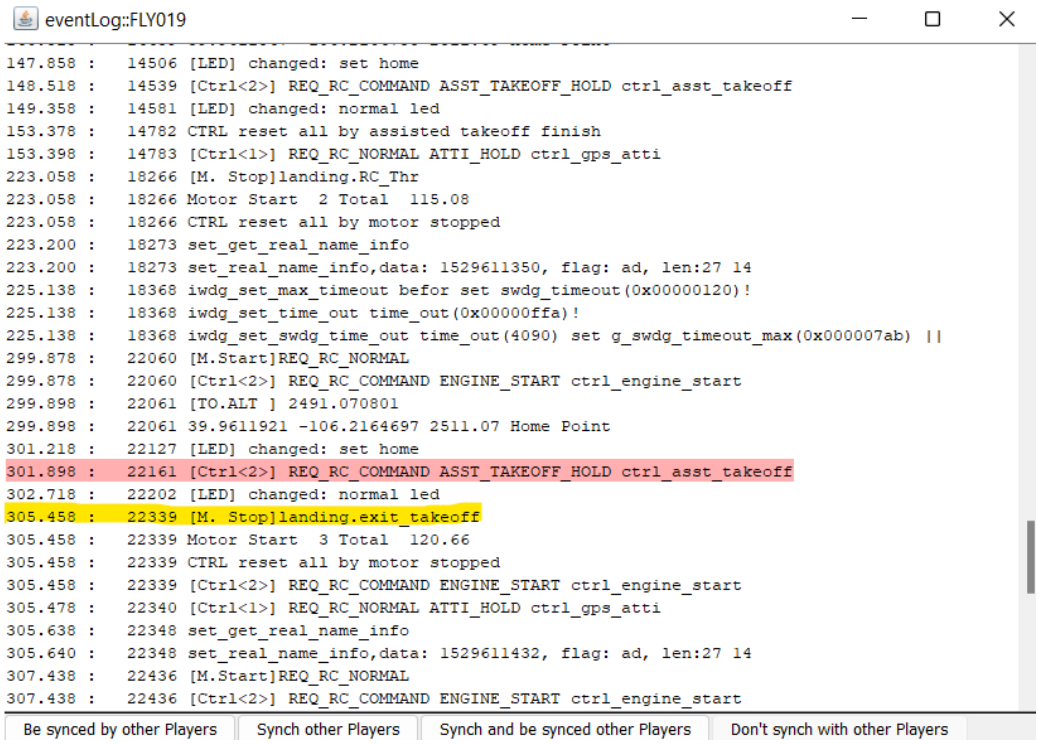
As shown in this screenshot, the information about this flight such as drone type, date of the flight, geo information is shown. This flight date is 2018-06-21 19:56:22 GMT.

ACType	P3S
dateTime	2018-6-21 19:56:22 GMT
geoDeclination	8.91 degrees
geoInclination	66.26 degrees
geoIntensity	52038.92 nanoTesla

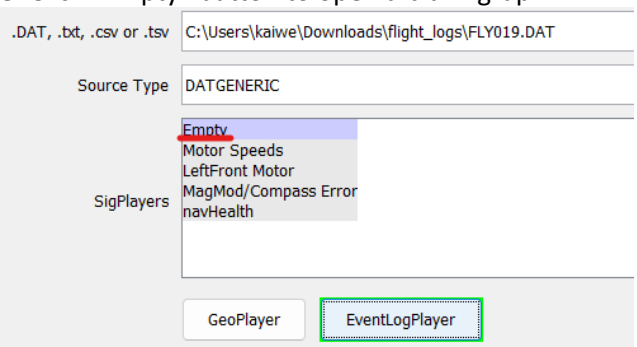
6. On the left side, click the “GeoPlayer” button, a map with the flight track is shown.

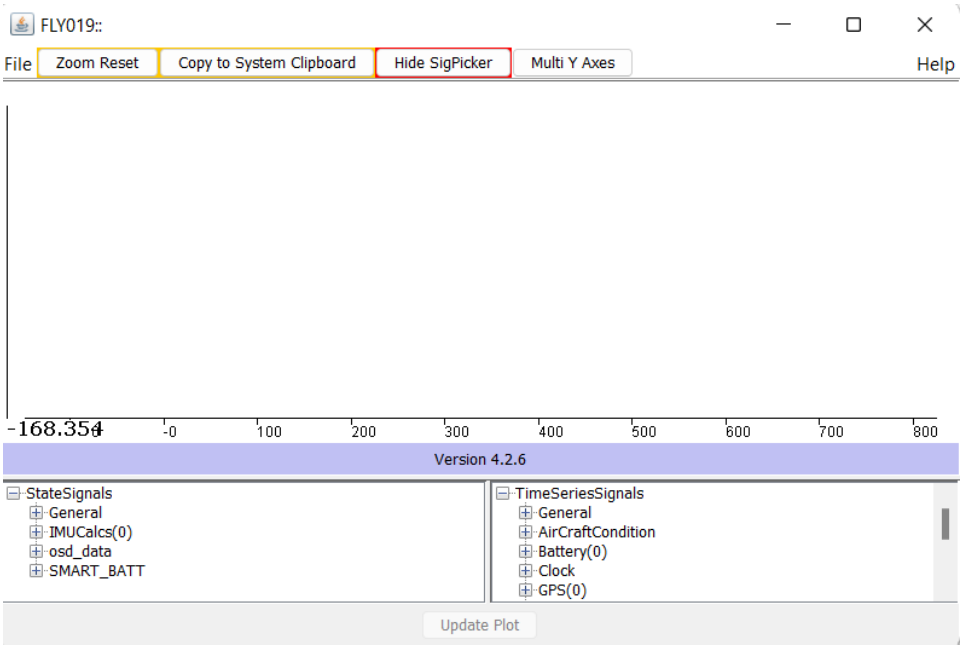


7. Click the “EventLogPlayer” button, the event log is displayed. The line highlighted in pink means the drone takes off, the line highlighted in yellow means the drone landed. These two events mean one flight finished and according to the event log, this drone took off and landed for five times and this is the number of flights.

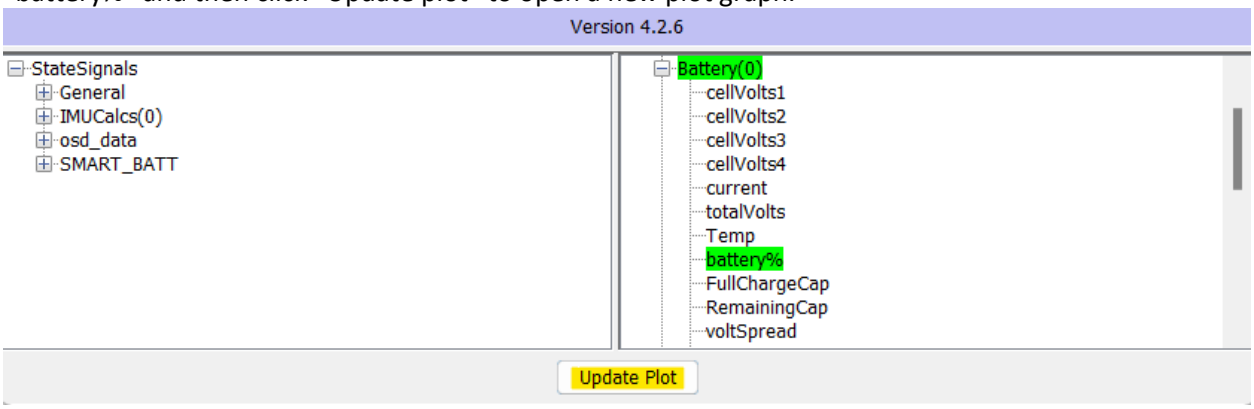


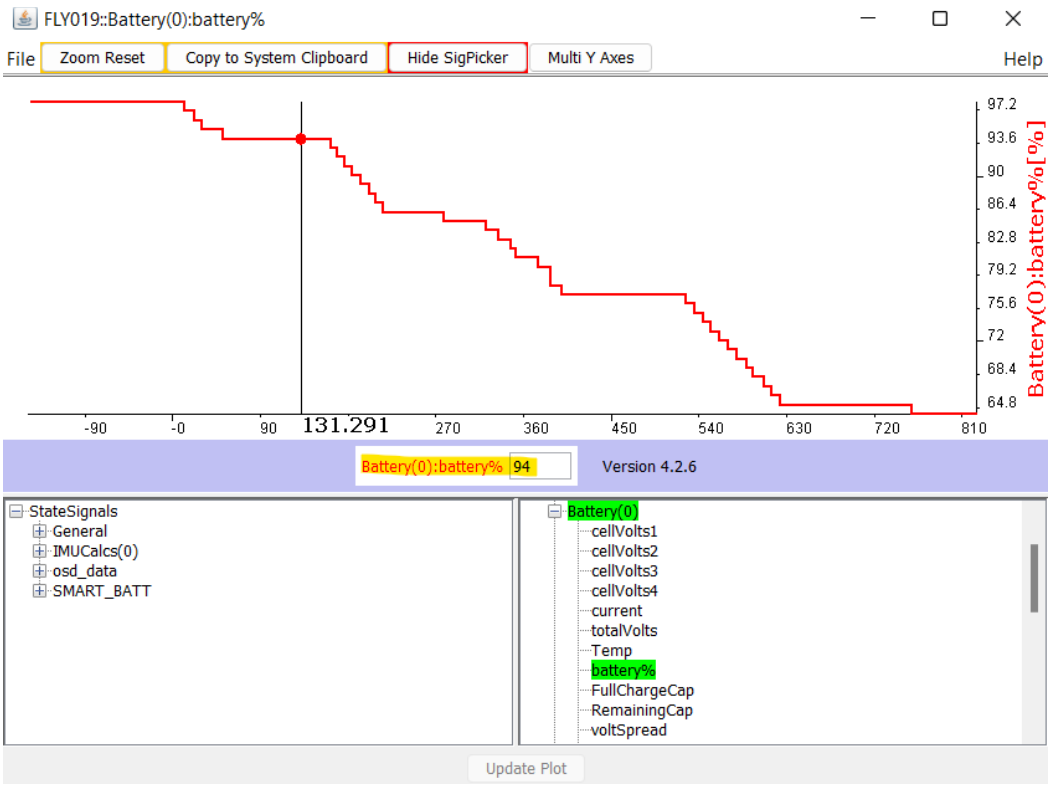
8. Click “Empty” button to open a blank graph.





Then click the plus sign beside the “Battery(0)” and to expand the battery information list and click “battery%” and then click “Update plot” to open a new plot graph.





As shown in this graph, the battery information changing with time is shown. And the percentage of the battery is highlighted in yellow. The highest percentage is 98% and the lowest percentage is 46%.