

The background features abstract, overlapping green geometric shapes in various shades, creating a modern and dynamic visual effect. The shapes are primarily triangular and polygonal, with some areas appearing more translucent than others.

Nakuja Project

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Week 5 report

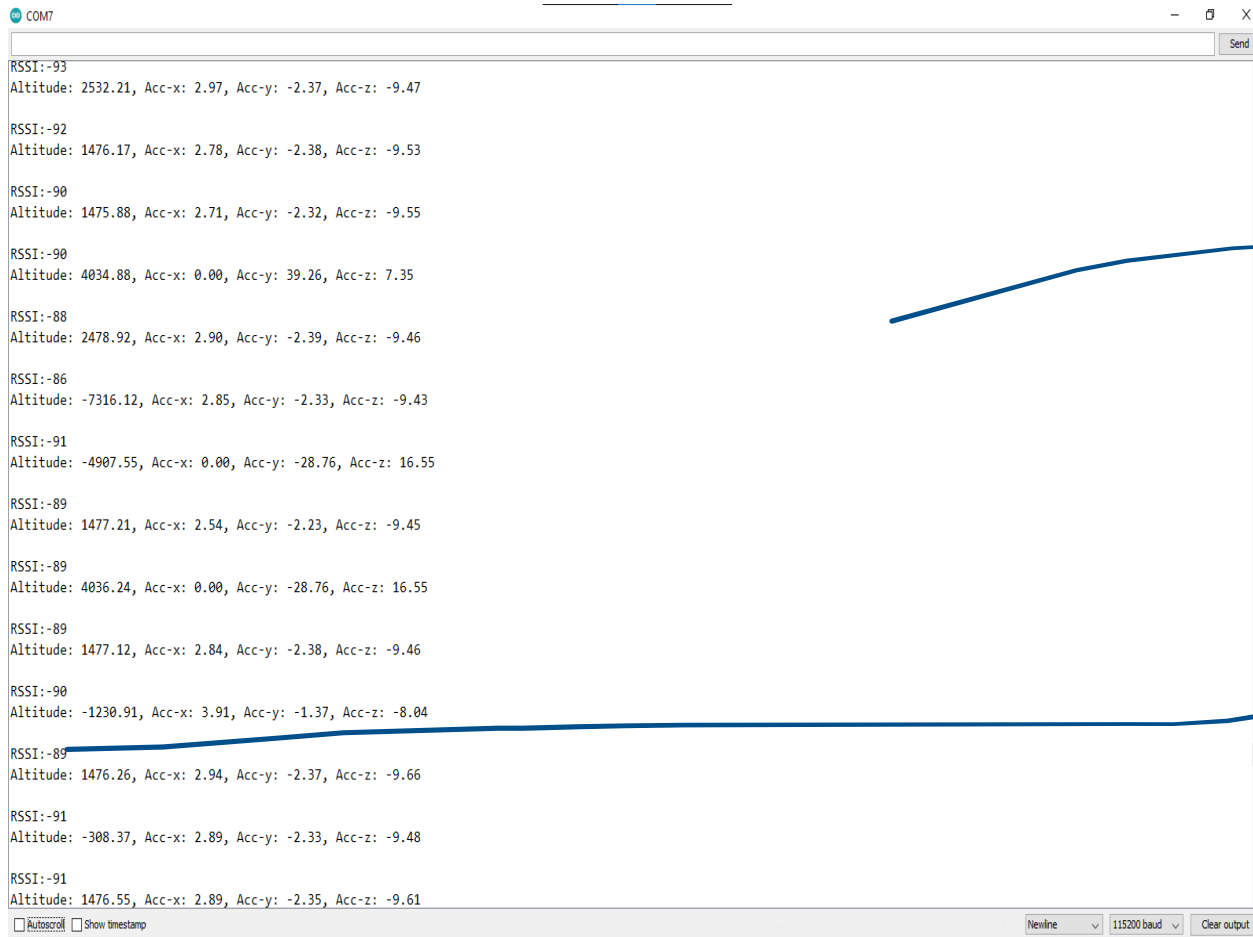
Tasks this week

- ▶ Avionics data transmission test
- ▶ Flight computer programming and documentation
- ▶ Research on Patch antennas

Avionics communication test with Drone

- ▶ We conducted tests on avionics data transmission with GEOid drone.
- ▶ There was interference
- ▶ Drone -> EMI interference
- ▶ BMP and MPU6050 sensor signals were disrupted
- ▶ Very low data rates during transmission while on ground
- ▶ Test did not give us the expected results

- We recommend using Non-EMI test kit like a water rocket to get the right data



```
COM7
RSSI:-93
Altitude: 2532.21, Acc-x: 2.97, Acc-y: -2.37, Acc-z: -9.47

RSSI:-92
Altitude: 1476.17, Acc-x: 2.78, Acc-y: -2.38, Acc-z: -9.53

RSSI:-90
Altitude: 1475.88, Acc-x: 2.71, Acc-y: -2.32, Acc-z: -9.55

RSSI:-90
Altitude: 4034.88, Acc-x: 0.00, Acc-y: 39.26, Acc-z: 7.35

RSSI:-88
Altitude: 2478.92, Acc-x: 2.90, Acc-y: -2.39, Acc-z: -9.46

RSSI:-86
Altitude: -7316.12, Acc-x: 2.85, Acc-y: -2.33, Acc-z: -9.43

RSSI:-91
Altitude: -4907.55, Acc-x: 0.00, Acc-y: -28.76, Acc-z: 16.55

RSSI:-89
Altitude: 1477.21, Acc-x: 2.54, Acc-y: -2.23, Acc-z: -9.45

RSSI:-89
Altitude: 4036.24, Acc-x: 0.00, Acc-y: -28.76, Acc-z: 16.55

RSSI:-89
Altitude: 1477.12, Acc-x: 2.84, Acc-y: -2.38, Acc-z: -9.46

RSSI:-90
Altitude: -1230.91, Acc-x: 3.91, Acc-y: -1.37, Acc-z: -8.04

RSSI:-89
Altitude: 1476.26, Acc-x: 2.94, Acc-y: -2.37, Acc-z: -9.66

RSSI:-91
Altitude: -308.37, Acc-x: 2.89, Acc-y: -2.33, Acc-z: -9.48

RSSI:-91
Altitude: 1476.55, Acc-x: 2.89, Acc-y: -2.35, Acc-z: -9.61
```

Autoscroll Show timestamp Newline 115200 baud Clear output

Some data received on ground
But none during flight

Very low RSSI Wifi signal values
Better antenna power needed

Flight computer programming

- ▶ Ongoing programming of flight computer
- ▶ Restructuring code as a state machine
- ▶ Every interval is a state. E.g

State	Description	Waiting for event
0	Launch	Waiting for lift-off
1	Lift-off detected	Waiting for apogee

- ▶ This will help in scaling the software for future versions
- ▶ Observation: need to have a means of restarting the flight computer remotely

Flight software documentation

- ▶ With every stage of flight software, we have been coming up with solid documentation
- ▶ Will ensure future coding will not be misinformed
- ▶ Help in external parties understanding the code

Research on patch antenna

- ▶ We recommended using patch antenna on the rocket for improved communication
- ▶ Literature shows we need to construct a microstrip antenna on board the rocket
- ▶ We intend to wrap aluminum foil around the rocket in circular patches to increase transmission strength

Tasks this week

- ▶ Complete flight computer software
- ▶ Finish avionics bay design
- ▶ Flight software test
- ▶ GSM communication test
- ▶ Code documentation completion