Nakuja Project

Week 5 Progress Report

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Tasks this week

- [#]Avionics bay design
- [#Issue 34] : Programming the flight computer
- [#Issue 77] : ESP Wi-Fi range test
- [#Issue 83] : Power Management
- [#Issue 30] : Research on Camera
- [#Issue 51] : Inquire on GEGIS drone

[#]Avionics Bay Design

- Avionics bay design is still a work in progress
- Because of changes in PCB dimensions, additional battery requirements and the power management PCB that needs to be factored in

[#34]Programming the flight computer

- We have been coming up with the flight logic for the rocket.
- Flight software for N3 is being refactored from N2.
- Additional functionality includes modularization, addition of data transmission functions and a single apogee detection function

[#77] ESP Wi-Fi range test

- Using a Yagi-Uda directional antenna, we tested the maximum range data can be sent without loss using Wi-Fi from an ESP32 on a line of sight
- We found out that at 300m, the data packet transmission rate reduced considerably.
- The RSSI value of the Wi-Fi kept on decreasing as the distance increased.
- RSSI values ranged from -50 to -92.

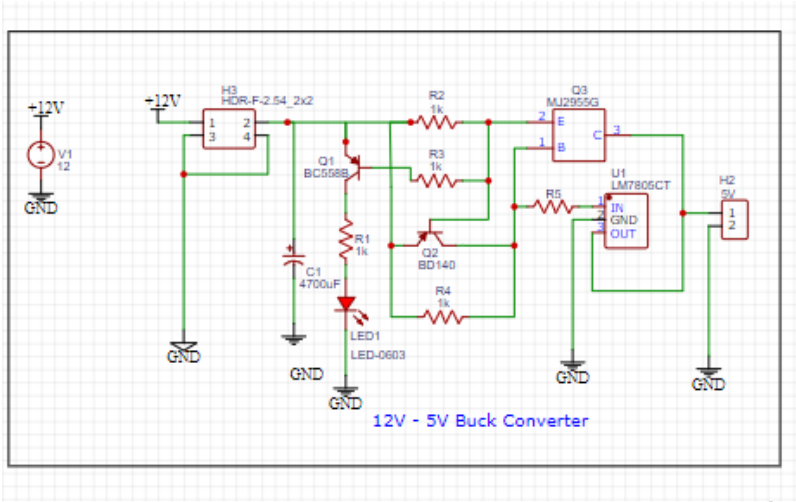
Improvements to be made

- Have an aluminum patch antenna onboard the rocket for transmitting

- Activate the LR Mode on ESP32. Though this will reduce the speed of transmission considerably

[#Issue 83] : Power Management

- We designed a power management board with an input voltage of 11.1V 5200mAh. The board distributes voltages to : a stable 12V, 5v and 3.3 V.
- Power is sourced from a li-po battery (11.1V 5200mAh 3S 35C)
- Current concerns were raised over the power consumption of the flight control’s motor, where we opted to go with a higher rated li-po battery.



[#Issue 30] : Research on Camera

- We noticed that the fpv camera we are currently using cannot store data to the onboard storage, we thus sought to use the connectors to store the footage on the ground station.

- A recommendation was also made during the static test to have a camera on the nozzle, we are currently researching on how we can implement the same.

[#Issue 51] : Inquire on GEGIS drone

- Having gotten the go-ahead to use the GEGIS drones, we spoke to Dr Muchiri, who is a licensed drone expert, to help us carry out tests.

- The test has been scheduled for Friday 25th February 2022.
- We seek to test our components capabilities in storing and transmitting data over 100m range.
- You are all welcome.

Tasks this week

- [#]Avionics bay design
- [#Issue 34] : Programming the flight computer
- [#Issue 77] : ESP Wi-Fi range test
- [#Issue 83] : Power Management
- [#Issue 26] : Improve on Kalman filter performance