**EE CprE SE 491 – MAY1732**

**Crazyflie Swarm Senior Design Team**

**Weekly Report 8**

**10/24-10/31**

**Faculty Advisers**

Phillip Jones

Nicola Elia

|  |  |  |  |
| --- | --- | --- | --- |
| **Member** | **Position** | **Weekly Hours** | **Total Hours** |
| **Nick Robbins** | **Team Leader** | **10** | **62** |
| **Ben Nelson** | **Key Concept Holder** | **8** | **40.5** |
| **Jake Frazier-Flores** | **Webmaster** | **7.75** | **38.75** |
| **Grant Manley** | **Key Concept Holder** | **9** | **43** |
| **Chengrui Yang (Roy)** | **Key Concept Holder** | **1** | **21.5** |
| **Cole Beaulieu** | **Communicator** | **9** | **60** |
| **Tianxiang Shen (Jesse)** | **Key Concept Holder** | **1** | **19.5** |

**This Week’s Progress**

1. Quads/Camera System

* We used a packet sender software to send a packet to a universal IP address. Both the chips were able to successfully receive the packet and output its length via serial monitor using UART communication.
* Implemented code so that the two ESP chips act as nodes in a mesh network. The chips have the capability to be both a Station and an Access Point. We used that capability to send a packet to one chip from the computer and then forward that packet to the next chip. We successfully were able to print out on our serial monitors via UART the response and request from the nodes.

1. Ground Station/Radio Systems

* Did a full function trace of the packets in the radio systems and firmware systems
* Realized Ack is concentration more in the nrf protocalls than the firmware TX/RX
* Figured how packets are received in the RX system and executed to the motors, can’t quite figure out how ack is being sent out by TX

**Pending Issues**

1. Figure out how ack is being sent out by TX
2. Attempt to send a packet to one of the chips and have it request a response from the other and  receive a response back. We understand that is TCP protocol but once we get that working we are going to just send it the packet with UDP protocol.
3. Waiting on expansion board, and bigger crazyflie components

**Plan of Action**

1. Cole – Work with Jake and Nick on implementing the mesh network using the wifi module
2. Nick – Continue implementing mesh network.
3. Jake – Planning to test the mesh network with UDP alterations and begin integrating with the crazyflie firmware team
4. Grant – help Cole, Jake, and Nick with implementing wifi mesh network
5. Chengrui ­– interface with big quad expansion board and old quad
6. Tianxiang – interface with big quad expansion board and old quad
7. Ben – Going to consult faculty at meeting today and see where to go from there

**Individual Contributions**

Cole:

* Monday: 2 hours – meeting prep and meeting
* Tuesday: 4 hours - wifi module work with Nick and Jake.
* Wednesday: 2 hours –wifi module work again
* Sunday 1 hours– weekly report

Nick:

* Monday 2 hours - Meeting prep
* Tuesday: 4 hours – Working on mesh networking. Also tested broadcast messaging with unique IP Adresses
* Wednesday: 2 hours – Continued work on mesh network
* Thursday: 1 hours – Worked on sending TCP packets
* Sunday: 1 hours – Design Document

Grant:

* Monday: 1 hours - group meeting
* Tuesday: 2 hours - looking into the crazy flie firmware with Ben
* Wednesday: 2 hours - tracing packets through firmware and looking for ack. Realized that ack isn't in the quadcopter firmware but rather the radio firm ware
* Thursday: 1 hour - talked to Ian and got new code base and looked over it
* Friday: 2 hours - started tracing more packets routes and hit road block on not finding function that are being called (might be built in functions that aren't explicated stated)
* Sunday: 1 hour – design document work

Jake:

* Monday: 1.75 hours - meeting prep and meeting
* Tuesday: 4 hours – worked with Cole and Nick on sending signals between the two wifi modules
* Wednesday: 2 hours – sent signals from one wifi module to the other using mesh network. Worked on forwarding data from station to other mesh networks

Ben:

* Monday: 1 hour - Group Meeting and prep for it
* Wednesday: 2 hours – working with Grant to understand the crazyflie STM firmware code as it relates to packet transmission
* Sunday: 5 hrs - Meeting with Grant to discuss STM firmware code. Working on understanding code for Crazyradio dongle, NRF firmware, STM firmware (reviewing code & creating call/called graphs with doxygen). Creating flowcharts for packet transmission for Crazyradio dongle, NRF chip, and a high-level overview.

Tianxiang Shen:

* Monday: 1 hour – group meeting

Chengrui:

* Monday: 1 hour – group meeting

**Meeting Minutes**

* Will be filled out on Monday and sent to the group via email.