New Business:

Visual Odometry:

Completed Tasks:

Installed OpenCV and ArUco files onto the raspberry Pi and got the camera to stream to a monitor.

Installed and Ran PuTTY and VNC Viewer onto Laptops to run RaspBerry Pi on Laptops.

Current Tasks:

Setup and Run OpenCV and ArUco libraries and integrate MSVC++ code onto the Pi. (9/23/2019)

Future Tasks:

Calibrate PiCamera to recognize ArUco Markers (9/30/2019)

Problems/Issues:

Questions:

How to go about translating our C++ Script onto RaspBerry Pi?

Advisor Notes:

Deadreckoning Team:

Current Tasks:

Research and find viable EKF code to implement into the IMU position code. Test IMU to find an average bias and implement code to compensate for the bias before calculations. Talked to Dr. Mekky about EOM motion for our model equation being put into the ekf code.

Deadlines:

Future Tasks:

Problems/Issues: Dr Mekky is trouble shooting the IMU because it is sending out error codes.

Questions:

Advisor Notes:

Pi Integration/GPS:

Current Tasks:

The Raspbian operating system was installed on a pi microcomputer to be used as an intermediary device to control sensor input into the pixhawk flight controller. Research on connection of the GPS to the raspberry pi continues.

A method of connecting the GPS to the raspberry Pi was discussed in depth. It was discovered that an adapter would be needed to connect the GPS module's cable to the interface board of the raspberry pi. A secondary power connection would not be needed as the pi outputs enough power to run the GPS, making turning the GPS on and off a simple function of toggling power to the output pin of the raspberry pi. A cable for the Here 2 GPS module will be purchased and used to create an adapter to connect directly to the pi.

A simple framework of the possible integration program to be run in the raspberry pi was made. The initial location, velocity, and acceleration data will be read from the GPS into the raspberry pi and be translated into Cartesian coordinates. This data will be used to calibrate the IMU before launch. The GPS will then be shut off and the accelerations given by the IMU during and after launch will be added to the previously recorded position. This position will be converted back into longitude and latitude to be sent to the Pixhawk flight controller as native GPS data.

Deadlines:

Future Tasks:

An 8 pin connector will be fashioned to connect the GPS to the digital input of the pi. A second 8 pin connector will connect the output of the pi to the GPS_1 port of the pixhawk.

Pinout help:

https://docs.px4.io/master/en/gps_compass/rtk_gps_hex_here2.html

Problems/Issues:

Questions:

Advisor Notes:

Fixed-Wing Platform:

Completed Task:

The wiring for the Dragon Link Transmitter has been corrected. Mission Planner parameters have been configured for the Dragon link and instructions for the remaining process has been found.

Current Task:

Pending on Masters Student.

Future Task:

Fully configuring the Fixed-Wing Platform to work with the Taranis Display Telemetry controller.

Deadline:

9/27/19