

1. **Project Name:** Peregrine Jet UAV
2. **CSE Team Members:**
  - Anthony Messina - amessina2016@my.fit.edu
  - Christian Cambron - ccambron2014@my.fit.edu
  - Nabil Osorio - nosorio2016@my.fit.edu
3. **Faculty Sponsor:**
  - Siddhartha Bhattacharyya - sbhattacharyya@fit.edu
4. **Client:**
  - Kimberly Demoret- Florida Tech Aerospace
5. **Meeting(s) with the Client for developing this Plan:**
  - 8/29/2018
  - 9/5/2018
6. **Goal and motivation:** The goal is to develop a system that allows for a jet UAV to fly at high speeds and perform flight test experiments. The motivation is to further the research into high speed drones, and to provide Florida Tech with a high speed UAV to perform experiments.
7. **Approach (key features of the system):** Discuss at least three key features/functionalities that your system provides for the users to help achieve the overall goal.
  1. Our system will transmit and receive data from the UAV and the ground Station. The information received will give the pilot a similar representation of all the gauges inside a normal cockpit, thus allowing him to have a better understanding of the operating conditions of the UAV.
  2. Our system will have a built in failsafe program in case the connection between Peregrine and the groundstation is lost. This will allow for the safe return of the UAV. Alongside the failsafe, a collision avoidance protocol must also be implemented so that the aircraft does not hit anything. All these protocols are in compliance to the FAA guidelines.
  3. The UAV will also have autonomous capabilities. The capabilities include following a path predetermined by the pilot, fly and drop a payload at a certain location, or survey an area.

8. **Novel features/functionalities:** There are no novel feature on the software side of the project since there are many other UAV drones that have the same system features implemented.

9. **Technical Challenges:**

1. The first challenge programming the controls for that allow the UAV to fly since we have to take into account all the variables that go into making a plane capable of flight.
2. We will be dealing with mostly C++ for the system, but we are not sure how to create a GUI to represent all the necessary data.
3. We are not sure how to decode that analog data sent and then convert it to digital per the client's request.

10. **Milestone 1 (Oct 1):** itemized tasks:

- Compare and select technical tools for communication with UAV and remote, what software we need for the UAV to send data from the sensors, and for visualization of the data received for the pilot. Also select Technical tools for setting up our environments, libraries, and frameworks.
- Provide small ("hello world") demo(s) to evaluate the tools for being able to send and receive data to the UAV and interpreting the data sent from the UAV.
- Resolve technical challenges:
  1. Programming the control software for the UAV
  2. Finding the language to create the GUI.
  3. Create a decoder for the specified signals received from the uav
- Compare and select collaboration tools for software development, documents/presentations, communication, task calendar
- Create Requirement Document
- Create Design Document
- Create Test Plan

11. **Milestone 2 (Oct 29):** itemized tasks:

- Implement, test, and demo controlling the UAV with a remote
- Implement, test, and demo the display of the data sent from the specific sensors.

**12. Milestone 3 (Nov 26):** itemized tasks:

- Implement, test, and demo autonomous flight in case of disconnection from controller.
- Implement, test, and demo autonomous flight of predetermined path.

**13. Task matrix for Milestone 1**

Task	Nabil	Christian	Anthony
Compare and select Technical Tools	communication	uav	visualization
"hello world" demos	sending/receiving data	Interpreting data	visualization
Resolve Technical Challenges	Language for GUI	Algorithm for control of UAV	Algorithm for decoding data
Compare and select Collaboration Tools	communication, task calendar	documents/presentations	programs
Requirement Document	write 50%	write 25%	write 25%
Design Document	write 25%	write 25%	write 50%
Test Plan	write 25%	write 50%	write 25%

**14. Approval from Faculty Sponsor**

- "I have discussed with the team and approve this project plan. I will evaluate the progress and assign a grade for each of the three milestones."
- Signature: \_\_\_\_\_ Date: \_\_\_\_\_