**Memorandum 5**

**From:** Justin Pajak, Patrick Creaven, Carter Goldman, Raytheon Preternship Team

**To:** Dr. Matthew Morrison, Assistant Teaching Professor, Department of Computer Science and Engineering, University of Notre Dame

**CC:** John Mallinger, Deputy Chief Engineer, Next Gen GPS Ground System, Raytheon Technologies

Below is an overview of what we have done so far with the project, and our plans for the future.

**What were the goals for this week?**

1. Make the Graph\_Sat class more concise by eliminating redundant functions
   1. Change graph\_sat to graph\_structure so we can add ground stations as well
2. Fix the Dijkstra’s algorithm function in the Graph\_Sat class so it doesn’t segfault when there are more than 2 satellites in the constellation
3. Create a constellation of satellites with a semi-realistic position relative to the center of the earth and determine their orbits
4. Create a user interface for the project

**What was accomplished this week?**

1. Eliminated some redundancies in Graph\_Sat
   1. Did not change graph\_sat to graph\_structure, instead handled ground station distance and pathfinding separately
2. Fixed Dijkstra’s Algorithm, tested it thoroughly
3. Created and beautified the user interface
4. Created the constellation of satellites and modeled their orbits
5. Enabled the user to enter longitude, latitude, and elevation to specify the location of a ground station
   1. Created function to convert ECEF coordinates to LLA
6. Cleaned up code base, added comments where needed did final testing

**Plan for presenting to Industry Mentor (John Mallinger)**

* Tuesday, November 17, 7:00pm
* Meeting via Zoom
* <https://notredame.zoom.us/j/6220853620>
* Planning on giving a powerpoint presentation, project interaction demo, and code demo

**How many hours were spent on each goal noted above?**

1. Justin Pajak - 11 hours
2. Patrick Creaven - 11 hours
3. Carter Goldman - 11 hours

Very Respectfully,

Justin Pajak

Patrick Creaven

Carter Goldman

Raytheon Preternship Team

University of Notre Dame

Department of Computer Science and Engineering