Project Proposal

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2)    **Project Overview**

We are using software that runs an IMU (inertial measurement sensor) to create an antenna that can actively receive updates and self-adjust to maximize connection of a directional antenna.

3)    **Software Goals:**

Active tracking of an antenna to follow the GNSS (Global Navigation Satellite System) through ROS (robot operating system) to receive live updates on location and turn the motor accordingly. Can be controlled remotely in and transmit coordinate data in real time to the user.

4)    **Resources:**

The software used is an open source MIT standard library from the GitHub link below along with the ROS operating system, which will help us to swap out different data sources from live sensors to log files. The ROS operating system is a three-clause BSD license, which will prevent us from running into restrictions and distributing the software. The hardware consists of a Raspberry pi 3, GNSS, stepper motor, and an IMU.

<http://www.ros.org/>

<https://github.com/CSUFTitanRover/TitanRover2019/blob/development/ros/roverimu/src/cal_run_Imu.py>

5)    **Use of resources in project:**

By using ROS and the GNSS, we can accurately use hardware which will in turn give us a better connectivity and reliability on determining the coordinates of the robot operating system.

6)    **New features:**

In the future, we would like to add haversine math formulas and commands to move and stop the stepper motor. And for the ROS to enable live updates of the correct position will be integrated with our project. Doing so will help us have a reliable operating system without any delay transmitting data to the ROS through the global navigation satellite system.

7) **Problems and solutions:**

After doing researching into ROS we have discovered that ROS tampers with the I2C signal on a Raspberry Pi. So, to solve this problem we will be using a web socket to communicate with ROS between the Raspberry Pi and a Nvidia Jetson TX2