Inertial guidance system + GPS by the payload recovery team

Idea: Utilize the resources of the Teency 4.1 development board. Use a path-constructing algorithm for the payload to follow with zone exclusion to avoid restricted areas The algorithm responsible for the path following is provided by PID.

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# Hardware

The development board is Teency 4.1 @ 600 MHz. Allows i2c communication protocol for the peripherals.

## Sensors

* MPU – [MPU 9250] – library: https://github.com/hideakitai/MPU9250
* GPS – [based on NEO-M9N]
* Altimeter – [MPL3115A2] – library: <https://github.com/adafruit/Adafruit_MPL3115A2_Library>
* Motor with encoder for the angle adjustment - [parallax 360 continuous rotation ]
* Servo to release a parachute

# Software

\*Description is here\*

## System states

System boot up in high altitude and opening the parachute

Following the path until the landing. At altitude x meters, we don’t allow reconstruction of the path.

An arbitrary landing point is chosen through a cost function.

Parachute opened and the path construction is boot up

After path construction is run, the system uses PID to follow the path

If unable to follow the path. The path finding algorithm is run again