Functional simulation of star trackers and GPS receivers

4 to 6 Months internship offer

1 UNIVERSITY SPACE CENTER OF MONTPELLIER

The University Space Center of Montpellier (CSUM) is the French leader in the development and operation of nanosatellites developed by students. It has acquired in-depth competences in the field of design, manufacturing, testing and operation of nanosatellites and their subsystems, as well as in the area of space project management and product assurance in the framework of university space projects. The CSUM has an AIT (Assembly Integration and Test) Facility, a CDF (Concurrent Design Facility) and both UHF and S-band Ground Stations. The CSUM develops its own 1U and 3U CubeSat nanosatellite platforms with the support of the Van Allen Foundation and both the French and the European space agencies.

2 INTERNSHIP DESCRIPTION

Objectives

The objective is to help the CSUM prepare future CubeSat missions requiring fine attitude determination and control (ADCS), especially in the frame of several pre-studies.

- Perform a small bibliographic research/state of the art of start trackers and GPS receivers at CubeSat scale
- Identify generic needs based on upcoming CSUM projects
- Make a short functional analysis to prepare the simulation of the systems
- Get familiar with the current ADCS simulation environment (MATLAB/Simulink)
- Simulate star trackers and GPS receivers and integrate them to the simulation environment
- Thanks to simulations and the functional analysis, evaluate the feasibility and performance of CubeSats equipped with such systems
- Write documentation and technical notes

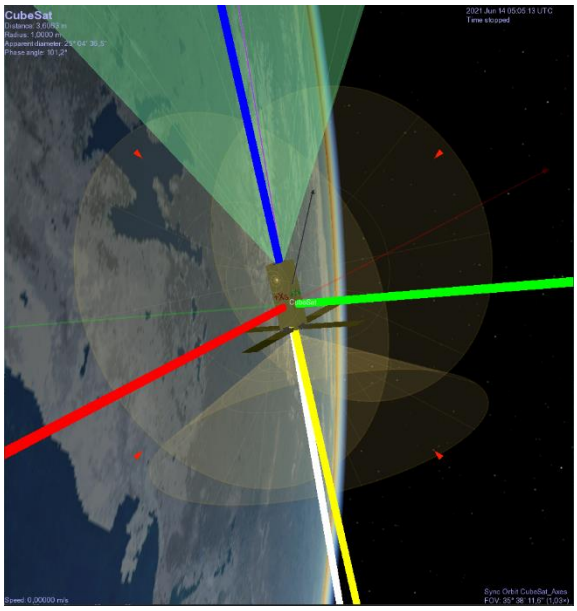

Figure 1: Visualization of a mission scenario using VTS.

Conditions

Level: 1st/2nd year of MSc or equivalent

Duration: 4 to 6 months

Skills/Languages:

- Knowledge of ADCS and CubeSats
- Experience in MATLAB/Simulink
- GIT or similar version control system – plus but not mandatory
- VTS (Visualisation Tool for Space data) – plus but not mandatory
- English – minimum: being able to have a technical discussion with experts and to write documentation

Location: Centre Spatial Universitaire de Montpellier, Campus Saint-Priest, Montpellier, France. Work from home may be an option based on the current COVID situation.

Preferred starting date: Position opened from 1st of September 2020

Supervisor, Function at CSUM: Gary Quinsac, Command/control engineer on ROBUSTA-3A

This internship is remunerated. Applications review process will start the 17th of August 2020.

3 CONTACT

Please upload your application at: https://csu.edu.umontpellier.fr/en/job-offers-internship/