

Internship offer

Software engineer for Star Tracker Demonstration Simulation



Context

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 to 12U CubeSat nanosatellite platforms with the support of the Van Allen Foundation and the French and European space agencies.

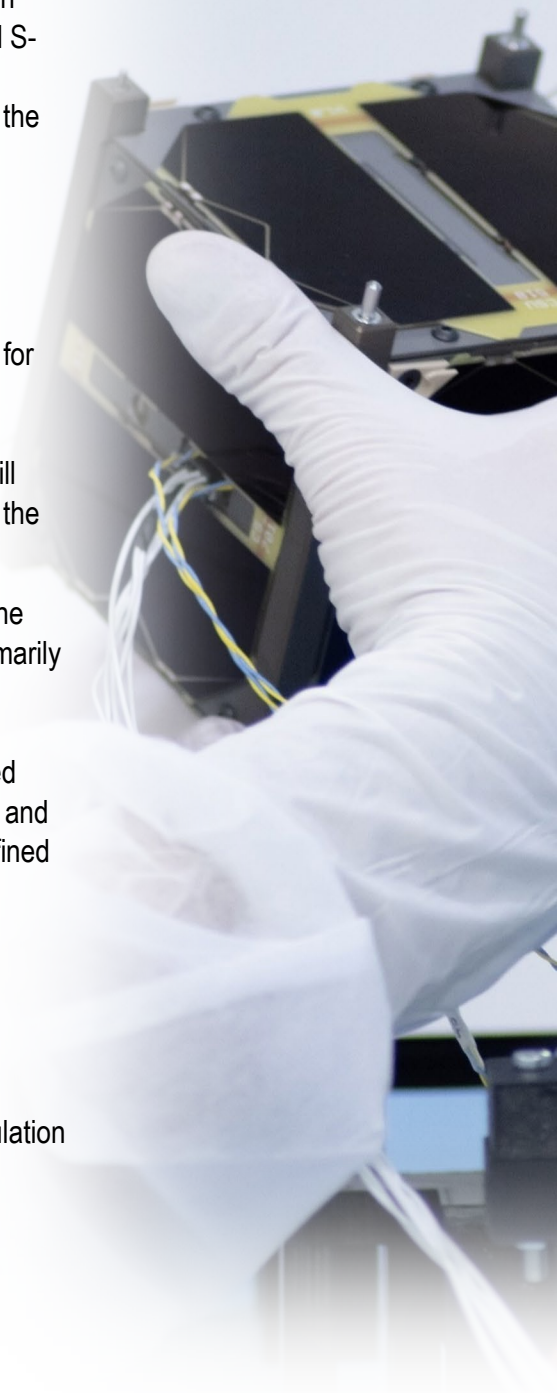
Internship description

As part of a collaboration between CSUM and Sodern, a company specializing in high precision optronic equipment, a demonstration setup for the Auriga star tracker is to be developed. With extensive experience in nanosatellite development and flight-proven Attitude Determination and Control System (ADCS) technology currently operating in orbit, CSUM will leverage its expertise to demonstrate the functionality and capabilities of the Sodern Auriga star tracker.

The main objective of this internship is to develop the user interface for the demonstration, with an ADCS simulation at its core. While the task is primarily user-oriented, it is strongly grounded in technical accuracy, the proper representation of orbital dynamics, and the operation of the star tracker sensor. In essence, the engineer/intern will develop a Raspberry Pi-based system that accepts commands from the user, provides visual feedback, and communicates with an Auriga star tracker to showcase a range of predefined scenarios.

Main activities related to your mission:

- Develop a user interface using PyQt or a similar framework
- Adapt and improve the existing python-based ADCS simulation
- Integrate in-orbit visualization using VTS Timeloop
- Refer to the existing flight-tested MATLAB/Simulink ADCS simulation to ensure technical accuracy



Level: 2nd year of Master Degree or equivalent. Lower levels considered suitable candidates.

Duration: 4 to 6 months

Skills (it is not mandatory to have all of them)

- Python programming
- Knowledge about CubeSats, attitude determination and control, control systems and filtering
- Experience in developing user-facing software and graphical user interfaces
- Familiarity with MATLAB/Simulink
- Experience with GIT or similar version control system
- English: being able to have a technical discussion with experts and to write documentation
- Ability to produce clear technical reports and presentations

Location: Centre Spatial Universitaire de Montpellier, Campus Saint-Priest, Montpellier, France.

Stipend: 4.5 euros/hour for duration between 308 and 924 hours, 35 hours/week.

Preferred starting date: March 2027

Supervisor: Marcis Livmanis – Control Systems Engineer ADCS –
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