INTERNSHIP OFFER

Development of a FreeRTOS tracer

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.
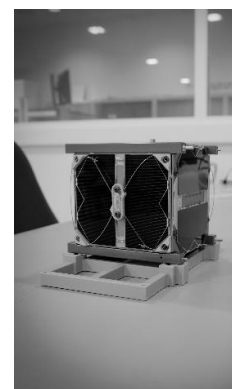
2 INTERNSHIP DESCRIPTION

We are using FreeRTOS as the OS for all of our satellites. It is difficult to track how the tasks are scheduled and how they communicates between each other in an OS. A switch from one task to another can depend on many factors, whether they are deterministic (a periodic task) or non-deterministic (an interrupt triggered on a GPIO pin). In order to have a better understanding on how the OS of our satellites is behaving, we are looking for an intern to develop a tracer for FreeRTOS.

The tool will be separated in two parts. The part on the microcontroller will send messages to the host PC while the part on the host PC will receives these messages and draw charts in real-time.

The intern's mission will be to:
- Write specifications depending on the needs of the CSUM
- Develop the part on the microcontroller side
- Develop the part on the host PC side, including a GUI interface
- Test the tool

One of our 1U during its AIT in our cleanroom

Skills: C, C++ and/or Python (OOP, inheritance). GUI design. Basic skills in bare metal programming. Basic knowledge in Operating Systems.

Languages: English or French

Level: Any level, starting from first year of University (Bac +1) in Electrical or Computer science.

Preferred starting date: March 2023   **Duration: 2 to 6 months**

Supervisor, Function at CSUM: Amaury KNOCKAERT, Embedded systems team leader

Location of the internship: CSUM at Montpellier, France

Stipend: 3.90 euros/worked hours for duration between 308 and 924 hours, 35 hours/week.

3 CONTACT

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