



Grenoble INP - UGA is a member of international engineering and management education and research networks. It is widely recognized in national and international rankings.



8 schools + 39 laboratories

8300 students

1 300 teaching, research, administrative and technical staff

Grenoble INP - UGA is a renowned public institution of higher education and research, and a major player in the Grenoble ecosystem. It is the engineering and management institute of Grenoble Alpes University, and plays a leading role in the scientific and industrial community.

PhD in Asynchronous Integrated Circuit Design Monitoring for safety and reliability

Job reference number	2024-PHDCIRCDDESIGN-TIMA
Research field	Digital Electronics (Embedded systems design, digital architecture design in disruptive technologies)
Host laboratory	TIMA (UMR 5159 Grenoble-INP, UGA et CNRS) https://tima.univ-grenoble-alpes.fr/
Researcher profile	PhD Student
Location	Grenoble, France
Hiring date / contract term	01/09/2024(36 months)
Contacts	laurent.fesquet@grenoble-inp.fr

Grenoble INP - UGA is a leading public institution accredited with the French label "Initiative d'excellence". It offers innovative engineering and management programs, with an increasing internationalization of its course offers. The courses are grounded in sound scientific knowledge and linked to digital, industrial, organizational, environmental and energy transitions. The Engineering and Management Institute of Grenoble Alpes brings together more than 1300 staff members (teacher-researchers, lecturers, administrative and technical staff) and 8300 students, located on 8 sites (Grenoble INP - Ense3, Grenoble INP - Ensimag, Grenoble INP - Esisar, Grenoble INP - Génie industriel GI, Grenoble INP - Pagora, Grenoble INP - Phelma, Polytech Grenoble, Grenoble IAE and the INP Prepa). Grenoble INP is also a highly-ranked institution of higher education and research, leading the way in the fields of engineering and management on an international scale. It is a member of a large number of international academic and research networks. It is part of the European University UNITE!.

As part of Grenoble Alpes University, Grenoble INP has associated guardianship of 39 national and international research laboratories and of technological platforms. The research conducted there benefits both its socio-economic partners and its students. Grenoble INP is at the heart of the following scientific fields: physics, energy, mechanics and materials; digital; micronanoelectronics, embedded systems; industry of the future, production systems, environment; management and business sciences.

Grenoble INP - UGA is an equal opportunity employer committed to sustainability. Grenoble INP-UGA celebrates diversity and equity and is committed to creating an inclusive environment for all employees. All qualified applications will be considered without discrimination of any kind.

Research

TIMA is a public research laboratory associated with CNRS, Grenoble-INP and UGA (Unité Mixte de Recherche 5159). TIMA is a multinational laboratory, with members and trainees from many foreign countries. Much of the research is carried out as part of cooperative projects with industrial and academic partners, supported by local, national and European grants. TIMA is structured into four research teams, and the candidate will join the CDSI (Circuit Design and System Integration) team. <https://tima.univ-grenoble-alpes.fr/>

The CDSI team activity covers a broad spectrum of activities from MEMS to systems. Indeed, the team postulates high performances are achieved thanks to disruptive technologies, which are at the frontiers of different fields of applications. Nevertheless, the team is built on two key pillars, sensing and event processing. Event-based techniques are key for enhancing integrated circuits and systems because they offer a unique opportunity to rethink circuit design, which does not take well into account most of the non-functional specifications, such as power, security, safety or electromagnetic emissions. This paves the way to ultra-low power systems, enhanced secured systems, proven design methods but also near sensor computing. Sensing and sampling is the second key. Taking advantage of smart sensors and actuators requires globally envisioning systems, favors a smart sensing approach limiting useless information and pushes new experiments and usage.

Position description:

This thesis studies asynchronous circuits incorporating safety/security and monitoring mechanisms to guarantee safe and/or secure operation. The structure of asynchronous circuits makes possible tracking data within the circuit. This remarkable property also helps to monitor circuit operations and detect potential problems at an early stage. A strategy for monitoring asynchronous circuits is therefore conceivable. This approach will be studied and analyzed in detail in order to define a method that could be systematically employed for circuits requiring robustness or dependability, such as a RISC V processor operating at very low voltage.

Specific requirements or conditions

Specifics of the position

The research may be led on 2 locations: Grenoble and St Martin-d'Hères.

Position assigned to a restricted area: YES

(Device for the protection of the scientific and technical potential of the nation, conditioning the appointment of the researcher to the authorization of the Defense Security Officer).

How to apply

Applications must be sent to: Laurent.fesquet@grenoble-inp.fr

Application deadline : 05/07/2024