

# FACULTY RECRUITMENT PROFILE

## Assistant Professor

### IRISA laboratory (UMR 6074) / CentraleSupélec Rennes campus



**Title:** Assistant Professor in Computer Security

**Position:** Assistant Professor in Computer Science/Engineering, at CentraleSupélec, in the CIDRE team of the Rennes campus / IRISA Laboratory (UMR CNRS 6074), “CDI de droit public”, level Assistant Professor. This is a tenured position under a public-law permanent contract opened to both junior and senior postdocs or assistant professors

**CNU Section:** For information, the position corresponds to CNU sections 27 – Computer Science, or 61 – Computer Engineering, Automation and Signal Processing

**Domain / Job profile:** Associate Professor position in Computer Science/Engineering (system security), Rennes campus of CentraleSupélec, IRISA lab

**Keywords:** Cybersecurity, hardware and software architecture security, network and system security, software security.

CentraleSupélec is a public scientific, cultural, and professional institution (EPSCP in French) under the authority of the Ministry of Higher Education and Scientific Research and the Ministry of the Economy, Industry and Digital Technology. Its main missions are the training of high-level scientific general engineers, research in engineering and systems sciences, and executive education.

The Rennes Campus Faculty is an academic department at CentraleSupélec whose educational scope covers the fields of Computer Science/Engineering, Electronics and Control for the 3-year CentraleSupélec Engineering Program. The department also manages Specialized Masters in Cybersecurity for CentraleSupélec.

The IRISA Laboratory is a joint venture resulting from the collaboration between eight institutions, in alphabetical order: CentraleSupélec, CNRS, ENS Rennes, IMT Atlantique, Inria, INSA Rennes, Université Bretagne Sud, Université de Rennes 1. IRISA is today one of the largest French research laboratories (more than 850 people) in the field of computer science and information technologies. Structured into seven scientific departments, the laboratory is a research center of excellence with scientific priorities such as bioinformatics, systems security, new software architectures, virtual reality, big data analysis and artificial intelligence. Located in Rennes, Lannion and Vannes, IRISA is at the heart of a rich regional ecosystem for research and innovation and is positioned as the reference in France with an internationally recognized expertise through numerous European contracts and international scientific collaborations. CIDRE is a research group of IRISA focusing on the security of information systems.

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## Context related to the environment of the position:

This position is aligned with a strategy to expand cybersecurity activities on the [Rennes campus of CentraleSupélec](#). Rennes, and Brittany in general, is one of the major centers in the domain of cybersecurity in France and Europe. Rennes has a rich and dynamic ecosystem in this domain, including players like the Ministry of the Armed Forces (General Directorate of Armament -DGA-, Cyber Defense Command), major industrial groups (Orange, Airbus, Thales, etc.) as well as increasing numbers of SMEs and startups, representing a total of more than 2,600 jobs and 70 companies in the field of cybersecurity. This ecosystem is currently experiencing a strong expansion: for example, the Ministry of the Armed Forces has forecast the creation of 1,800 more jobs between 2018 and 2025 in this field in Rennes.

The different cybersecurity actors are federated within the *Cybersecurity Excellence Center* ([Pôle d'Excellence Cyber](#)). The academic partners have created a multidisciplinary cyber security competence center ([C<sup>3</sup>](#)). A dedicated building will soon support this competence center, enabling it to host many cyber security research and teaching activities in the same place. Academic partners also participate in the Graduate Research School [EUR Cyberschool](#). Cybersecurity is at the heart of the research work of several IRISA teams and constitutes one of its [transverse axes](#).

Cybersecurity has been one of the distinctive assets of the Rennes campus of CentraleSupélec for the past thirty years. This topic is strongly present throughout our courses in the [InfoSec track](#), the [Cyber specialization](#) of the CentraleSupélec engineering curriculum and the ["mastère spécialisé" in CyberSecurity](#) (continuing education), co-accredited with IMT Atlantique.

[CIDRE](#) is a joint research team from CentraleSupélec, [Inria](#), the University of Rennes 1 and the CNRS, and it is part of IRISA laboratory (Institut de Recherche en Informatique et Systèmes Aléatoires, UMR 6074). Its research themes focus on attacks against computer systems, including the generation of attack scenarios, the understanding of malicious code, the supervision of systems and networks, and the securing of low-level architectures. The team members rely on and develop various tools and methods to meet these objectives, including static and dynamic code analysis, machine learning, microarchitecture design, and distributed algorithms.

The team develops software and sets up realistic experiments on several platforms (Igrida, Grid5000, malware analysis platforms developed by the CIDRE group). The High-Security Laboratory (LHS) hosts some of these platforms.

The team collaborates actively with different industrial partners (large industrial groups, governmental organizations, and start-ups) through CIFRE grants, collaborative projects, and software transfer.

## Academic profile:

Teaching activities will be carried out over a broad spectrum covering the courses offered as part of CentraleSupélec Engineering program, the more specialized InfoSec and Cyber specializations, as well as the Master programs and "mastère spécialisé" (continuing education) in Cybersecurity:

- Engineering and Master degrees: preparing and giving lectures, guided tutorials and laboratory work, supervising projects and internship students
- Continuing education: develop and teach tutorials or specialized courses on specific subjects

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Teaching subjects include competencies in computer science, software development, computer networking, IoT, and cybersecurity. The candidate should be able to teach in one or more of the following areas:

- System security (OS, hypervisor, firmware);
- Intrusion detection and security monitoring
- System and network administration (Linux and Windows);
- Wireless networking;
- IoT software development;
- Web development and security;
- Network security.

As some of these courses are taught in English, the ability to teach in English is expected.

### Research profile:

CentraleSupélec aims to recruit a candidate with a research project in cybersecurity. The candidate will join the CIDRE team or possibly any other IRISA team. Particular attention will be paid to applications with a research project that fits into the following themes (in order of priority):

- Security at the software/hardware interfaces
- System and network security
- Malware analysis

A candidate who can initiate collaborations with the IETR laboratory ([UMR CNRS 6164](#)) around the previous themes (especially hardware security) would be a plus.

The candidate must demonstrate the ability to collaborate and lead research activities, by participating in the supervision of student work, and should be able to establish academic and industrial partnerships on this activity, at the national and international level.

### Candidate profile (Profile expectations):

- The candidate must hold a thesis in the field of Computer Science/Engineering with significant scientific contributions in computer systems security.
- Ambition to develop high level research activities and to be involved in the scientific community at the national and international level.
- Ability to work in collaboration both within a team and with academic or industrial partners, in an international context.
- Experience in teaching and an interest in dissemination.

### Recruitment interview:

For the candidates selected for the audition, the audition will take place in three stages:

- A presentation of the candidate's background and integration project.
- An illustration of a 5-minute lesson, given in English, on a problem, whose subject is identical for all candidates, will be specified on the invitation.
- An exchange with the members of the committee.

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The duration of the three parts of the audition will be specified in the invitation letter.

### **Candidatures:**

File in pdf format, including:

- A cover letter.
- A detailed CV (teaching experience, research, mobility, publications, etc.).
- An integration project in research and teaching.
- A copy of the identity card or passport.
- A copy of the doctoral degree.
- And any documents that attest previous experience.

must be sent by email only to the two contacts below before April 1<sup>st</sup>, 2022, at the latest:

- Lorraine Maret, ressources humaines : [lorraine.maret@centralesupelec.fr](mailto:lorraine.maret@centralesupelec.fr)
- Elodie Ledoux, ressources humaines : [elodie.ledoux@centralesupelec.fr](mailto:elodie.ledoux@centralesupelec.fr)

Candidates can contact Valérie Viet Triem Tong ([valerie.viettrientong@centralesupelec.fr](mailto:valerie.viettrientong@centralesupelec.fr)), head of the CIDRE team, who will introduce them to other members of the CIDRE team or to the IETR or IRISA teams.

### **Scientific contacts:**

Valérie Viet Triem Tong, head of the CIDRE team: [valerie.viettrientong@centralesupelec.fr](mailto:valerie.viettrientong@centralesupelec.fr)

Guillaume Hiet, member of the CIDRE team: [guillaume.hiet@centralesupelec.fr](mailto:guillaume.hiet@centralesupelec.fr)

Christophe Bidan, Director of the Rennes campus of CentraleSupélec:  
[christophe.bidan@centralesupelec.fr](mailto:christophe.bidan@centralesupelec.fr)

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