



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 + 38 laboratories

8 350 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.**

## Professor

Research profile field	Network and security
Requested job profile	Professor
Ministerial reference for the position	27 PR 0546
CNU section	27
Job location	Grenoble (Saint Martin d'Hères campus – ENSIMAG – LIG laboratory)
Hiring date	01/09/2024 (DD/MM/YY)
keywords	Cybersecurity, Network, Security.

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 8 350 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 38 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.

# Teaching

**School:** Grenoble INP – Ensimag

**School website:** <https://ensimag.grenoble-inp.fr/>

**Contact:** [direction@ensimag.fr](mailto:direction@ensimag.fr)

**School presentation:**

Since its creation, Grenoble INP - Ensimag has established itself as the reference school for digital technology by combining expertise in applied mathematics and computer science. The school aims to train engineers with a thorough mastery of the fundamentals, ensuring their ability to keep pace with technological developments and adapt continuously throughout their careers.

In a world where the digital economy generates a quarter of global growth, information technologies now account for more than one in three job opportunities for all professionals, whether in the fields of health, culture, energy, or the environment. In this context, Grenoble INP - Ensimag positions itself at the heart of the digital revolution, shaping engineers ready to tackle the complex challenges of contemporary society.

Every year, Grenoble INP - Ensimag welcomes and educates over 300 students in its core disciplines, with the ambitious educational goal of turning our students into inventors, engineers, and operators of this new society. They are envisioned to shape the digital future while embodying excellence and innovation in the field.

The research activity presented in the application must be proven, in particular by international publications.

**Teaching Profile:**

The Professor will integrate the Architecture-System-Network pedagogical team of the Ensimag school of engineering and will participate in teaching activities ranging from Bachelor's level to Master's level (Bac+3 to Bac+5) in the network theme, covering everything from the link layer to the application layer. This includes multiple access, routing, transport, and security-related issues. There is a significant pedagogical need both in the core curriculum, for the introduction to communication networks and security course in the first year (lectures/tutorials/practical work), as well as in the second year for the ISI option or advanced network courses in the third year. The recruited person will be responsible for the network training programs of the school, the Erasmus Mundus CODAS master's program, and the alternating work-study RIE master's program. Finally, it is expected that the recruited person will actively contribute to the evolution of the Grenoble INP - Ensimag educational framework and propose reforms to keep it up-to-date and relevant.

# Research

**Host laboratory:** LIG

**Laboratory website:** <https://www.liglab.fr/>

**Contact:** [noel.depalma@univ-grenoble-alpes.fr](mailto:noel.depalma@univ-grenoble-alpes.fr)

## **Laboratory presentation:**

The Grenoble Computer Science Laboratory (LIG) is a research laboratory whose academic partners are: CNRS, Grenoble INP-UGA, Inria, Grenoble Alpes University. The LIG brings together nearly 500 researchers, doctoral students and research support staff. They report to different organizations and are spread across three LIG sites: the campus, Minatec and Montbonnot. The ambition is to rely on the complementarity and recognized quality of the 22 LIG research teams to contribute to the development of fundamental aspects of computer science (models, languages, methods, algorithms) and to develop synergy between the challenges conceptual, technological and societal aspects associated with this discipline.

## **Research Profile:**

Networks have become pervasive and are at the heart of the digital society. They are constantly evolving to offer increasingly higher speeds and adapt to new uses. As the complexity of networks increases, they must operate efficiently and reliably, supporting a wide diversity of services for users with diverse needs. One of the critical aspects is user trust and security of communication networks. To do this, the design of future networks will have to address concerns of flexibility, security, heterogeneity and end-to-end performance interoperability.

The challenges that arise in this context comprise ensuring secure, reliable services even in the presence of heterogeneous network segments or infrastructures, and capable of evolving, for instance to follow the requirements of applications in terms of low latency. Controlling performance and, in particular, data transmission times, either at the level of wired or wireless links, or end to end in the network, is becoming a major challenge. Improving latency concerns several layers of the protocol stack: acting on DNS name resolution performance, proposing new methods of traffic management and congestion control, designing real-time flow supports and content placement methods and calculations close to users as well as designing new traffic measurement and analysis methodologies. New measurement methods can help identify data transmission issues, prevent security issues and spoofing attacks (e.g. IP, DNS, BGP).

In this context of increased complexity and high performance, the issue of communication and data security also becomes important in view of the risks, threats and vulnerabilities linked to our dependence on digital technologies and interconnected systems. The opening of networks to a large number of IoT type objects, the dependence of almost all areas of our life on continuous and reliable communication and an increasing number of possibilities for attacks by malware amplify the security and safety problems. vulnerability.

Description of the research areas associated with the position:

**Network aspects:**

- design and development of energy-constrained communication protocols and mechanisms for the Internet of Things,
- wireless networks, improved latency and throughput
- methods for measuring large-scale network traffic
- methods for analyzing and classifying network traffic, methods for analyzing encrypted traffic
- design and development of transport protocols and Congestion Control and Quality of Service algorithms

**Cybersecurity aspects:**

- methods for detecting anomalies, intrusions and attacks, DNS infrastructure security and domain name abuse
- security and privacy protection of IoT connected objects
- automation of self-protection mechanisms: dynamic management of trade-offs between security/privacy, performance, and utility of shared data
- secure communication protocols and mechanisms

The recruited person will not necessarily have an area of expertise covering both the above domains. She will be expected to demonstrate a potential to play a significant role in fostering research both at a local scale (PhD supervision, relations with local actors) and at the national level and beyond (research projects, collaborations).

## Specific requirements

Administrative activities related to the duties of a lecturer / Professor: he or she will be in charge of a teaching unit, a programme or a year.

## How to apply

Applicants must submit their applications on the Galaxie Platform of the French Ministry of Higher Education and Research from the 22nd of February 2024, 10 a.m. (Paris time zone) to the 29th of March 2024, 4 p.m. (Paris time zone), deadline.

Any document sent outside the Galaxie procedure will not be taken into account.

The interview will include simulation/situational exercises.

The details will be communicated when the invitation is sent out. In addition, part of the interview may be carried out in English.