IMT Atlantique
Bretagne-Pays de la Loire
École Mines-Télécom

IMT Atlantique

Description de poste pour
appel à candidatures

Date de mise à jour :	06/03/25
Intitulé du poste :	Research Engineer or Postdoctoral Fellow
Contrat (+ durée si CDD) :	12 months
Date prévisible d'embauche :	As soon as possible
Localisation (choisir selon campus) :	2 Rue de la Châtaigneraie, 35510 Cesson-Sévigné
Direction/Service/UO :	Département Systèmes Réseaux, Cybersécurité et Droit du numérique (SRCD)
Poste du supérieur hiérarchique :	Responsable de département
Catégorie et métier du poste dans le cadre de gestion de l'IMT – Code emploi :	II R – E00421
Catégorie dans la fonction publique :	A
Pour tout renseignement :	
Contact poste :	Georgios Z. PAPADOPOULOS Professor SRCD/IMT Atlantique, OCIF/IRISA Laboratory georgios.papadopoulos@imt-atlantique.fr
Contact administratif/RH :	Fanny Bernard – Assistante recrutement fanny.bernard@imt-atlantique.fr Mélissandre MORVAN – Assistante recrutement melissandre.morvan@imt-atlantique.fr

1- WORK ENVIRONMENT

Internationally recognized generalist engineering school of the IMT (Institut Mines-Télécom), leading French engineering school (Technological University), IMT Atlantique aims to support transitions, train responsible engineers, and use scientific excellence to serve teaching, research, and innovation.

The Research Teams of Department of Network Systems, Cyber Security and Digital Law (SCRD, https://www.imt-atlantique.fr/fr/l-ecole/departements-d-enseignement-recherche/srcd) of IMT Atlantique and IRISA Laboratory are participating in a national research consortium project called 5GMetaverse.

2- MISSIONS

We are seeking an Engineer (or Postdoctoral fellow) to deploy and analyze cellular Radio Access Networks (RANs), focusing on ensuring low-latency and reliable communications for various services, among which critical applications such as the metaverse. The ideal candidate will have expertise in wireless network security and lower-layer protocol analysis. As a minimum, the potential candidate should master C and/or C++ programming languages, and fundamental computer networks knowledge (TCP/IP protocol stack).

As a 5G engineer or postdoc, taking part of the national 5G Metaverse project funded by BPI, you will conduct implementation tasks as well as empirical assessments of Quality of Service (QoS) degradation

situations in a 5G radio context which eventually harm the proper delivery of a metaverse service. The reason of such QoS degradation may be tight to network threats, network state of or the end-user behavior. Given the work already achieved in this area in the research group (see Reduction-of-Quality (RoQ) attacks targeting latency-sensitive services in [1]), you will especially investigate Radio Link Control (RLC) and Medium Access Control (MAC) and their interaction. Your role will consist in (1) implementing the solutions designed in the research group to protect the latency in a 5G radio network based-on open-source and commercial 5G testbeds leveraging the Open Air Interface (OAI), and (2) analyzing the performance of solution under various scenarios.

3- ACTIVITIES

- **Design and implement experimental testbeds to evaluate performance of commercial User Equipment (UEs) and network components.**
- **Conduct performance assessments of RANs, identifying protocol-layer behavior impacting latency and reliability.**
- **Analyze Security Protocols and measure their impact on quality of service.**
- **Collaborate with industry and academic partners/researchers to enhance RAN mechanisms.**
- **Contribute to technical reports and research publications.**

4- TRAINING AND SKILLS

Minimum education and/or experience required:

- Bac + 5 degree or equivalent
- Bac + 4 degree or equivalent with professional experience ≥ 4 years
- Bac + 3 or equivalent with professional experience ≥ 6 years
- Bac + 2 or equivalent with professional experience ≥ 10 years

Minimum level of training and/or experience desired:

- Bac + 5 degree in engineering or equivalent

Essential skills, knowledge and experience:

- General knowledge of networks and mobile networks
- Systems skills (Unix)
- Computer skills (C and C++ development, Python)
- Network Security Concepts and Protocols

Abilities and skills:

- Willingness to embrace new ideas and drive innovation
- Quick to respond and take initiative
- Independent, detail-oriented, and collaborative
- Strong organizational, analytical, and problem-solving abilities
- Experience working effectively with remote teams
- Strong written communication skills in both French and English

5- OTHER INFORMATION

- As part of the Bpifrance 5GMetaverse project, the role will require periodic travel to other either IMT (Institut Mines-Télécom) schools or industrial partners, to facilitate coordination and collaboration efforts. Such possible missions will involve engaging with research teams, project stakeholders, and technical experts to align objectives, share progress, and ensure seamless integration of initiatives across multiple institutions. Activities may include participating in

strategic meetings, presenting findings, contributing to joint research efforts, and coordinating the deployment and evaluation of 5G-related technologies within the project framework.

- This position is open for potential Postdoctoral Fellows as well.

Monthly Salary

The monthly salary depends on the professional experience of the potential engineer or postdoc.

Location

Campus of Rennes - 2, rue de la Châtaigneraie, 35576 Cesson Sévigné Cedex

References

[1] Virgil Hamici-Aubert, Julien Saint-Martin, Renzo E. Navas, Georgios Z. Papadopoulos, Guillaume Doyen, and Xavier Lagrange. Leveraging overshadowing for time-delay attacks in 4g/5g cellular networks: An empirical assessment. In Proceedings of the 19th International Conference on Availability, Reliability and Security, ARES '24, 2024.