Activity report

Nina Tamdrari

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Contents

Current situation

Post-doctorate, Inria Lyon, Agora Team 🔗   June 2024 - December 2025

- **Subject:** Discover and maintain services in dynamic 3D ad-hoc fleets.
- Scientific project manager: Fabrice Valois 🔗 in collaboration with Razvan Stanica 🔗 and Hervé Rivano 🔗

University education

Computer Science Doctorate, University of Lille, Villeneuve d'Ascq   October 2020 - December 2023

- **Title:** Predicting requirements for the rapid deployment of mobile multi-acess edge computing (MEC) ressources.
- **Discipline:** Computer Science
- **Laboratory:** Inria, team FUN 🔗
- **University of affiliation:** *University of Lille*
- **Thesis supervisor:** Nathalie Mitton 🔗, Research Director, Inria
- **Reporter:** Saadi Boudjit 🔗, Associate Professor (*Maître de Conférences*), *Habilitation à Diriger les Recherches* (HDR), *University of Sorbonne Paris Nord (USPN)*
- **Reporter:** Hervé Rivano 🔗, University Professor, *Institut national des sciences appliquées Lyon (INSA Lyon)*
- **Examinator:** Christelle Caillouet 🔗, Associate Professor (*Maîtresse de Conférences*), *Habilitation à Diriger les Recherches* (HDR), *University of Côte d'Azur*
- **Examiner and Chair of the Jury:** Ahmed Rahmani 🔗, University Professor, *École Centrale de Lille*

Master in Computer Science, University of Lille, Villeneuve d'Ascq   September 2018 - June 2020

- **Speciality:** TIIR : Internet infrastructure technologies and their robustness
- **Master's thesis topic:** Study on edge resource management for mission-critical applications.
- **Master's thesis supervisor:** Nathalie Mitton 🔗

Teaching

Functional Programming, University of Lille   2021

In 2021, as a part-time lecturer (*vacataire*), I taught 42 hours of tutorials (*Travaux dirigés*) and practical work (*Travaux pratiques*) in **Functional Programming** for a group of students at the University of Lille, during the second semester of the *Licence 3* (third-year bachelor's degree) in computer science.

Informatique et Société Numérique 1 (ISN1), INSA Lyon   2024/2025

In 2024-2025, as a part-time lecturer (*vacataire*), I did 24 hours of tutorials (*Travaux dirigés*) teaching in **Informatique et Société Numérique 1** for a group of students at INSA Lyon, during the first semester of the first year of the integrated preparation cycle for the engineering cycle, in the **Formation Initiale aux Métiers d'Ingénieur** (FIMI) department.

TCP/IP protocols, INSA Lyon   2024

In 2024, as a part-time lecturer (*vacataire*), I taught 14 hours of **TCP/IP Protocols**, tutorials (*Travaux dirigés*) and practical work (*Travaux pratiques*) at INSA Lyon, during the first semester of the 1st year of the engineering cycle, in the Telecommunications, Services and Uses department.

Status	Year	Institution	Level	Teaching subject	Class size	Volume HTD	Responsibilities
Vacataire	2021	University of Lille	Licence 3 (third-year bachelor)	Functional Programming	1 group of around 25 students	42	Tutorials (*Travaux dirigés*) and practical work (*Travaux pratiques*). Creation and correction of continuous assessment subjects for a TD group. Oral evaluation of a practical project.
Vacataire	2024	INSA Lyon	1st year of the engineering cycle	TCP/IP protocols	1 group of about 16 students	14 (TD : 6h, TP : 12h)	Tutorials (*Travaux dirigés*) and practical work (*Travaux pratiques*).
Vacataire	2024	INSA Lyon	1st year of the integrated preparatory cycle	*Informatique et Société Numérique*	1 group of 24 students	24	Tutorials (*Travaux dirigés*) and practical work (*Travaux pratiques*). Correction of continuous tests for a group. Proofreading of test and tutorials subjects.

Total volume HTD   80

Table 1: Summary of teaching activities.

Research activities

Edge resource allocation for dynamic networks

Dates: 2020 to 2023

This research activity was carried out during my doctoral thesis, from 2020 to 2023, at Inria Lille. It is part of a European CHIST-ERA project, DRUID-NET 🔗.

In this research activity, we have proposed predictive tools and algorithms for decision-making concerning the allocation of fixed and mobile resources, both in terms of time and space, within dynamic environments.

Linked publications: [Sae+21; Ham+22; SM21; Ham+21; SFM21; San+21; Nin+22]

Discover and maintain services in dynamic 3D ad-hoc fleets

Dates: 2024 to 2025 (present)

This work is being carried out as part of my post-doctorate (current position) at Inria Lyon, in collaboration with Thalès.

In this research activity, our objective is to to study service discovery and maintenance in increasingly heterogeneous and dynamic networks, with nodes both in and out of line of sight (LOS), with services having different priorities and characteristics.

List of publications

International peer-reviewed journals

Aroosa Hameed et al. "Toward QoS Prediction Based on Temporal Transformers for IoT Applications". In: *IEEE Transactions on Network and Service Management* 19.4 (2022), pp. 4010–4027. DOI: 10.1109/TNSM.2022.3217170

Nina Santi and Nathalie Mitton. "A resource management survey for mission-critical and time-critical applications in multiaccess edge computing". In: *ITU Journal on Future and Evolving Technologies* (2021). URL: https://api.semanticscholar.org/CorpusID:245377642

Firdose Saeik et al. "Task offloading in Edge and Cloud Computing: A survey on mathematical, artificial intelligence and control theory solutions". In: *Computer Networks* 195 (2021), p. 108177. ISSN: 1389-1286. DOI: https://doi.org/10.1016/j.comnet.2021.108177. URL: https://www.sciencedirect.com/science/article/pii/S1389128621002322

International peer-reviewed conferences

Aroosa Hameed et al. "A Machine Learning Regression Approach for Throughput Estimation in an IoT Environment". In: *2021 IEEE International Conferences on Internet of Things (iThings) and IEEE Green Computing & Communications (GreenCom) and IEEE Cyber, Physical & Social Computing (CPSCom) and IEEE Smart Data (SmartData) and IEEE Congress on Cybermatics (Cybermatics).* 2021, pp. 29–36. DOI: 10.1109/iThings-GreenCom-CPSCom-SmartData-Cybermatics53846.2021.00020

National peer-reviewed conferences

Nina Santi, Brandon Foubert, and Nathalie Mitton. "Comment générer des traces applicatives avec FIT IoT-LAB pour la science ouverte". In: *CORES 2021–6ème Rencontres Francophones sur la Conception de Protocoles, l'Évaluation de Performance et l'Expérimentation des Réseaux de Communication.* 2021

International peer-reviewed workshops

Nina Santi et al. "Automated and Reproducible Application Traces Generation for IoT Applications". In: *Proceedings of the 17th ACM Symposium on QoS and Security for Wireless and Mobile Networks.* Q2SWinet '21. Alicante, Spain: Association for Computing Machinery, 2021, pp. 17–24. ISBN: 9781450390804. DOI: 10.1145/3479242.3487321. URL: https://doi.org/10.1145/3479242.3487321

Open data sets

Santi Nina et al. *Jeux de données: Traces d'applications IoT.* Zenodo, Nov. 2022. DOI: 10.5281/zenodo.7347970. URL: https://doi.org/10.5281/zenodo.7347970

Collective responsibilities

Organization of the LS-NoT workshop

With Jana Koteich ✇ and Damien Wohwe Sambo ✇, we organized the 2023, 2024 and 2025 editions of the LS-NoT (Long and Short Range Wireless Technologies Applied to IoT for Networks of Tomorrow) workshop, co-located with DCOSSS-IoT (International Conference on Distributed Computing in Smart Systems and the Internet of Things) ✇.

Participation in review committees

- **2021** IEEE Conference on Standards for Communications and Networking (CSCN)

- **2022** The 20th ACM International Symposium on Mobility Management and Wireless Access (2022)

- **2023** IEEE International Conference on Pervasive Computing and Communications (PerCom)

- **2023** IEEE International Conference on Communications (ICC): SAC Social Networking Track

- **2023** IEEE Global Communications Conference: Green Communication Systems and Networks

- **2023** IEEE Global Communications Conference: Wireless Communications

- **2023** IEEE Global Communications Conference: Mobile and Wireless Networks

Participation in research groups

Participation in the *Journées Reproductibilité, Expérimental & Plateformes* ✇ from September 16th to 17th 2023.