TAREQ SI SALEM

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Algerian and EU (FR) Permanent Resident

SUMMARY

Dr. Tareq Si Salem is a Sr. Researcher/Engineer at the Huawei Paris Research Center. He earned his Ph.D. in CS from Inria in 2022. He previously held positions as a postdoctoral researcher at Northeastern University in Boston (2023) and a visiting researcher at TU Delft (2022) in the Netherlands. His current research interests lie at the intersection machine learning, and optimization particularly in the context of system constraints such as privacy, resource constraints, and safety. His work has been published in top-tier venues including IEEE/ACM ToN, ACM SIGMETRICS, IEEE INFOCOM, NeurIPS, and AAAI. He received a Best Paper Award at ITC 2021.

EDUCATION

Inria Sophia-Antipolis, France *2019–2022*
Ph.D. in Computer Science
Supervisor: Giovanni Neglia, Research Director, Inria Sophia-Antipolis, France
Title: Online Learning for Network Resource Allocation
Reviewers:
- Douglas Leith, Professor, Trinity College Dublin, Ireland
- Leandros Tassiulas, Professor, Yale University, USA

Examiners:
- Edmund Yeh, Professor, Northeastern University, USA
- György Dán, Professor, KTH Royal Institute of Technology, Sweden
- Walid Debbous, Research Director, Inria Sophia-Antipolis, France

Defense Date: October 17, 2022
Research team: Network Engineering and Operations (NEO), Inria

Université Côte d'Azur, France *2018–2019*
International M.Sc. in Computer Science
Master thesis: Large-scale Assessment of Population Exposure to Wireless Communication
Advisor: A. Legout, Research Director, Inria Sophia-Antipolis
Awards: Labex UCN@Sophia Scholarship

INELEC, Algeria *2012–2017*
BS. and MS. in Computer Engineering
Master thesis: Design and implementation of a multi-fiber reconstruction algorithm for diffusion MRI
Advisors: C. Dallila, Assoc. Professor, INELEC, and R. Deriche, Research Director (exceptional class), Inria Sophia-Antipolis

EMPLOYMENT RECORD

Huawei Technologies, Paris, France *04/2024–present*
Sr. Researcher/Engineer
Developed and deployed machine learning models to address key business challenges, primarily focusing on time series forecasting and optimization of wireless network operations within the Huawei business. Key achievements include:

- Proposed a novel framework for Goal-Oriented Time-Series Forecasting, enabling inference-time adaptability. This dynamic approach allows models to adjust predictions on-the-fly to emphasize

specific regions of interest without requiring retraining, resulting in performance improvements ranging from 20% to 90% and an average improvement of 55% across various downstream tasks. This framework facilitates the adaptability of a single model to diverse tasks at inference time without further training. A preprint, code, and dataset is released.

- Served as the main organizer of the forecasting challenge Spatio-Temporal Beam-Level Traffic Forecasting Challenge, which included the introduction of a novel 5G beam-level multi-variate dataset that is unique in the public domain. It attracted 700 participants with 12,000 EUR cash price.
- Supervised L. Fechete, a student from École Polytechnique (BX25 cohort), leading to the successful completion of their thesis (A+ grade).

Northeastern University, Boston, MA, USA *03/2023–03/2024*
Postdoctoral Research Associate
I worked under the supervision of Stratis Ioannidis on Machine Learning related problems. My role spanned different projects in the AI Institute for Future Edge Networks and Distributed Intelligence (AI-EDGE), Data-Centric Approaches to Distributed Machine Learning, and the Institute of Wireless Internet of Things (WIoT).

Delft University of Technology (TU Delft), The Netherlands *03/2022–08/2022*
Long-term visiting appointment
I visited the Embedded and Networked Systems (ENS) group at TU Delft to work with George Iosifidis on network optimization and economics.

Inria, Sophia-Antipolis, France *03/2019–08/2019*
Intern
Research team: Design, Implementation, and Analysis of Networking Architectures (DIANA)
Topic: Large-scale assessment of population exposure to wireless communication radiation

TEACHING EXPERIENCE

Subject	Location	Date
Softwares for Luxury Business Analytics	Cannes, France	4 lectures (24H), fall 2022
Optimization for Machine Learning	Sophia-Antipolis, France	2 lectures (6H), winter 2021
Distributed Optimization and Games	Sophia-Antipolis, France	1 lectures (3H), winter 2020

ACHIEVEMENTS

- Prix d'excellence d'Université Côte d'Azur, 2021
- Best Paper Award at the International Teletraffic Congress (ITC 33), 2021

LANGUAGES

English/French (Full Professional Proficiency), Kabyle/Arabic (Native).

SOFTWARE DEVELOPMENT SKILLS

Proficient in programming languages and libraries commonly used in machine learning (Python, TensorFlow, PyTorch, scikit-learn, HF Transformers), and in production languages (Java, C/C++).

SCHOLARLY AND PROFESSIONAL ACTIVITIES

Reviewer.

- IEEE Communications Letters
- IEEE Transactions on Mobile Computing
- IEEE/ACM Transactions on Networking

- Elsevier Journal on Computer Networks
- Elsevier Journal on Performance Evaluation
- Journal of Combinatorial Optimization
- IEEE INFOCOM

Supervision.

- Supervised the thesis of L. Fechete, École Polytechnique, BX25.
- Co-advised with G. Iosifidis: M. Mäkelä (paper and poster) and Q. J. Oschatz (paper and poster), TU Delft, The Netherlands.

PUBLICATIONS

Preprints.

[P1] Luca-Andrei Fechete, Mohamed Sana, Fadhel Ayed, Nicola Piovesan, Wenjie Li, Antonio De Domenico, Tareq Si Salem. Goal-Oriented Time-Series Forecasting: Foundation Framework Design. ArXiv:2504.17493, 2025. *(Lead researcher)*

[P2] Andrei-Laurentiu Bornea, Fadhel Ayed, Antonio De Domenico, Nicola Piovesan, Tareq Si Salem, Ali Maatouk. Telco-oRAG: Optimizing Retrieval-augmented Generation for Telecom Queries via Hybrid Retrieval and Neural Routing. ArXiv:2505.11856, 2025.

[P3] Caelin Kaplan, Angelo Rodio, Tareq Si Salem, Chuan Xu, Giovanni Neglia. Federated Learning for Collaborative Inference Systems: The Case of Early Exit Networks. ArXiv:2405.04249, 2025.

Conferences.

[C1] Henri Alam, Antonio De Domenico, Tareq Si Salem, Florian Kaltenberger. A Multi-Armed Bandit Framework for Online Optimisation in Green Integrated Terrestrial and Non-Terrestrial Networks. IEEE SPAWC, Surrey, UK, 2025.

[C2] Tareq Si Salem. Adaptive Transductive Inference via Sequential Experimental Design with Contextual Retention. NeurIPS BDU, 2024. (*Short version*)

[C3] Tareq Si Salem, Gözde Özcan, Iasonas Nikolaou, Evimaria Terzi, Stratis Ioannidis. Online Submodular Maximization via Online Convex Optimization. *Annual AAAI Conference on Artificial Intelligence*, Vancouver, Canada, 2024.

[C4] Tareq Si Salem, George Iosifidis, Giovanni Neglia. Enabling Long-term Fairness in Dynamic Resource Allocation. *ACM SIGMETRICS*, Orlando, Florida, USA, 2023.

[C5] Yuanyuan Li, Tareq Si Salem, Giovanni Neglia, and Stratis Ioannidis. Online Caching Networks with Adversarial Guarantees. *ACM SIGMETRICS*, Mumbai, India, June 6–10, 2022.

[C6] Tareq Si Salem, Giovanni Neglia and Damiano Carra. AÇAI: Ascent Similarity Caching with Approximate Indexes. *International Teletraffic Congress (ITC 33)*, Aug. 31st–Sep. 3rd, 2021. **Best Paper Award.**

[C7] Tareq Si Salem, Gabriele Castellano, Giovanni Neglia, Fabio Pianese, and Andrea Araldo. Towards Inference Delivery Networks: Distributing Machine Learning with Optimality Guarantees. *Mediterranean Communication and Computer Networking Conference (MedComNet 2021)*, June 15–17, 2021.

[C8] Tareq Si Salem, Giovanni Neglia, and Stratis Ioannidis. No-Regret Caching via Online Mirror Descent. *IEEE International Conference on Communications (ICC 2021)*, June 14-23, 2021.

[C9] Anirudh Sabnis, Tareq Si Salem, Giovanni Neglia, Michele Garetto, Emilio Leonardi, and Ramesh K. Sitaraman. GRADES: Gradient Descent for Similarity Caching. *IEEE International Conference on Computer Communications (INFOCOM 2021)*, May 10–13, 2021.

Journals.

[J1] Tareq Si Salem, Gabriele Castellano, Giovanni Neglia, Fabio Pianese, and Andrea Araldo. Towards Inference Delivery Networks: Distributing Machine Learning with Optimality Guarantees. *IEEE/ACM Transactions on Networking, 2023.*

[J2] Tareq Si Salem, Giovanni Neglia, and Stratis Ioannidis. No-Regret Caching via Online Mirror Descent. *ACM Transactions on Modeling and Performance Evaluation of Computing Systems (ToMPECS)*, 2023.

[J3] Tareq Si Salem, George Iosifidis, Giovanni Neglia. Enabling Long-term Fairness in Dynamic Resource Allocation. *Proceedings of the ACM on Measurement and Analysis of Computing Systems (POMACS)*, 2023.

[J4] Tareq Si Salem, Giovanni Neglia and Damiano Carra. Ascent Similarity Caching with Approximate Indexes. *IEEE/ACM Transactions on Networking*, 2022.

[J5] Anirudh Sabnis, Tareq Si Salem, Giovanni Neglia, Michele Garetto, Emilio Leonardi, and Ramesh K. Sitaraman. GRADES: Gradient Descent for Similarity Caching. *IEEE/ACM Transactions on Networking*, 2022.

[J6] Yuanyuan Li, Tareq Si Salem, Giovanni Neglia, and Stratis Ioannidis. Online Caching Networks with Adversarial Guarantees. *Proceedings of the ACM on Measurement and Analysis of Computing Systems (POMACS)*, 2022.

TALKS

[T1] NetOPT: Optimizing and Modeling Networks in the Wild. The ICPC International Collegiate Programming Contest Europe Championship (*Sponsor Talk*). Porto, Portugal, March, 2025.

[T2] Machine Learning Driven Antenna Tuning for Optimal Network Performance. Global Antenna Technology & Industry Forum (*Keynote*). Athens, Greece, Sept., 2024.

[T3] Online Learning for Network Resource Allocation. Networks Seminar Series, Centre for Networked Intelligence, Indian Institute of Science, November, 2023.

[T4] Tutorial on Online Convex Optimization. Machine Learning Reading Group, Northeastern University, October, 2023.

[T5] No-Regret Caching via Online Mirror Descent. Invited session: What's new in TOMPECS? ITC 35, Turin, Italy, October, 2023.

[T6] Enabling Long-term Fairness in Dynamic Resource Allocation. Sigmetrics 2023, Orlando, Florida, USA, June, 2023

[T7] Enabling Long-term Fairness in Dynamic Resource Allocation. Poster Session, WIoT Industry Day, Boston, MA, USA, May, 2023.

[T8] Online Learning for Network Resource Allocation. AI EDGE Seminar Series 22, Boston, MA, USA, April, 2023.

[T9] AÇAI: Ascent Similarity Caching with Approximate Indexes. ITC 33, August, 2021.

[T10] Towards Inference Delivery Networks: Distributing Machine Learning with Optimality Guarantees. MedComNet 2021, June, 2021.

[T11] No-Regret Caching via Online Mirror Descent. ICC 2021, June, 2021.