Sai Fadaei

Guildford, UK

Ph.D. Researcher in Computer Science · Systems Engineer

saifadaei.me

saeed.fadaei1996@gmail.com

linkedin.com/in/iamsaeedfadaei

Research Interests

Network Resilience | Distributed Systems | Large-scale Network Experimentation | Satellite Communications

Professional Experience

University of Surrey - Doctoral Researcher — Guildford, UK

Oct 2024 - Present

- **Lead developer and operator of LEOScope**, a global testbed running measurement clients at Starlink-connected sites from Antarctica to northern Canada. LEOScope received the **ACM SIGCOMM 2025 Best of CCR Award** and has supported more than 16 research papers.
- **First author, ACM SIGMETRICS 2026**: conducted a 1.5-year measurement study of the effects of severe and extreme geomagnetic storms on satellite-network performance across orbital regimes.
- Conducted a year-long measurement campaign on Starlink connectivity in Antarctica, characterising inter-satellite-link paths, TCP congestion-control behaviour and seasonal effects on remote links.
- Extended Xeoverse, a digital twin for LEO, MEO and GEO satellite networks, by adding in-space CDN architectures, inter-satellite-link mesh topologies, routing and queueing models, and support for TCP congestion control.

University of Surrey - Research Engineer — Guildford, UK

Nov 2023 - Nov 2024

- Shipping the core infrastructure for LEOScope, including node orchestration, experiment scheduling and data collection across geographically distributed sites.
- Developed two tools for the £3.4m EPSRC project Privacy-Enhancing Technologies for Life Transitions (AP4L): Risk Playground, a large language model (LLM)-based gamified platform for exploring privacy risk; and Transition Guardian, an on-device span detector AI model that detects sensitive self-disclosure before data leaves the device.

Hezardastan Group - Karnameh - Senior Software Engineer → Software Team Lead — Tehran, Iran

Aug 2022 - Dec 2023

- **Promoted within one year from Senior Software Engineer to Software Team Lead**, leading a **21-person cross-functional engineering and design team** of front-end/back-end engineers and designers.
- Refactored a legacy codebase into an event-driven microservices architecture which support reducing maintenance overhead and enabling faster feature delivery.
- Designed and launched a real-time matching system for car inspections which reduced operational costs by 40%.
- Planned delivery, reviewed technical designs and code, and mentored junior developers across the team.
- Introduced an automated lead-scoring and notification workflow that analysed user behaviour and prioritised leads for the sales team, reducing manual triage by around 50%.

Panco - Software Team Lead — Tehran, Iran

May 2022 - Aug 2022

- Built an event-driven socket layer for real-time voice rooms and used it to launch three multiplayer games, which supported the Company revenue rose by around 25% following their launch.
- Clustered the data layer to improve throughput and load distribution, while removing single points of failure.
- Designed a queue manager that prioritised live voice sessions and maintained service quality under high concurrent load.

Nobitex - Software Engineer (Blockchain) — Tehran, Iran

May 2021 - May 2022

- Implemented graph-based transaction validation for anti-money laundering, with real-time checks up to six transaction hops and asynchronous monitoring beyond that depth to identify and blacklist suspicious accounts.
- Added queueing to the transaction-matching service so that user transactions were processed fairly under load.
- Implemented a ML-base user face recognition auth system that reduced the associated customer-support workload by 80%.

Shaya Smart Solutions - Backend Engineer — Tehran, Iran

Apr 2020 - May 2021

- Built a low-latency trading core and transaction-matching engine for Agah Broker to target processing high-volume stock-market transactions as the first phase of the company's move to online trading.
- Created a pipeline to crawl and annotate Farsi multimedia content and documents for a graph-based search engine.

Honors & Awards

- **Best of CCR**, ACM SIGCOMM 2025, awarded for the paper "LEOScope: Building a Global Testbed for Low-Earth Orbit Satellite Networks."
- **Student Research Competition Nomination**, ACM SIGCOMM 2025, for "Storms Above, Disruptions Below: Mapping the Impact of Extreme Solar Storms Across Orbital Regimes."

Publications

[1] **Fadaei, S.**, Raman, A., Sharma, P. B. P., & Sastry, N. R. (2026). A comprehensive study of satellite network performance during severe or extreme geomagnetic storms over 1.5 years (May 2024–Oct. 2025). *SIGMETRICS 2026* doi:10.1145/3788084

[2] **Fadaei, S.**, Tiwari, S., Taneja, A., Bhushan, S., Kassem, M. M., Raman, A., Bhattacherjee, D., Qiu, L., Woodward, A., & Sastry, N. R. (2025). LEOScope: Building a global testbed for Low-Earth Orbit satellite networks. *ACM SIGCOMM CCR 2025* doi:10.1145/3750832.3750835

[3] **Fadaei, S.**, Raman, A., & Sastry, N. R. (2025). Storms above, disruptions below: Mapping the impact of extreme solar storms across orbital regimes. *Proceedings of the ACM SIGCOMM 2025*. doi:10.1145/3744969.3748456

[4] Jangra, S., De, S., Sastry, N. R., & **Fadaei, S.** (2026). Protecting vulnerable voices: Synthetic dataset generation for self-disclosure detection. In *Social Networks Analysis and Mining: ASONAM 2025*. Springer. doi:10.1007/978-3-032-13821-7_1

[5] Bose, R., **Fadaei, S.**, Mohan, N., Kassem, M., Sastry, N. R., & Ott, J. (2024). It's a bird? It's a plane? It's CDN!: Investigating content delivery networks in the LEO satellite networks era. In *HotNets 2024*. doi:10.1145/3696348.3696879

[6] Lo, C.-J. R., Marina, M. K., Sastry, N. R., Xu, K., **Fadaei, S.**, & Li, Y. (2024). Shrinking VOD traffic via Rényi-entropic optimal transport. *SIGMETRICS 2024* doi:10.1145/3639033

[7] **Fadaei, S.**, & Amiri, F. (2019). Blockchain in cloud computing and security challenges. In *Third National Conference on Computer Engineering, Information Technology and Data Processing*. Civilica record

Education

University of Surrey - Supervisor: Prof. N. Sastry; co-supervisor: Dr. E. Toreini Guildford, UK
Ph.D. in Computer Science *Oct. 2024 – Present*

- Research focus: LEO satellite networks, Internet measurement, CDN architectures, and network resilience.

University of Isfahan - Supervisor: Dr. N. Moghim Isfahan, Iran
M.Sc. in Computer Systems Networking and Telecommunications *Oct. 2019 – Feb. 2023*

- Thesis: "Network Slicing Based Mobility Management in 5G Networks and Beyond: A QoS Improvement Approach." Thesis GPA: **3.5/4.0**.
- Fully funded studentship after ranking in the **top 1%** of the nationwide M.Sc. entrance exam.

Hamedan University of Technology - Supervisor: Prof. H. Bashiri Hamedan, Iran
B.Sc. in Computer Engineering *Oct. 2014 – Dec. 2018*

- Thesis 1: "Blockchain in Cloud Computing: Security Challenges."
- Thesis 2: "An OpenCV face-parts recognition module for access-control experiments."
- B.Sc. GPA: **3.5/4.0**.
- Fully funded studentship after ranking in the **top 1%** of the nationwide B.Sc. entrance exam.

Technical Expertise

Languages	Python, JavaScript, Bash, SQL; working knowledge of C/C++ and Go.
Distributed Systems	Kafka, Redis, event-driven architectures, microservices, asynchronous processing, real-time systems.
AI & Data	PyTorch, TensorFlow, Pandas, NumPy, OpenCV; applied machine learning and generative AI for networking, privacy, and user safety.
Backend & Web	FastAPI, Django, Flask, Sanic, React, REST APIs, native web technologies.
Infrastructure & Data	Docker, Kubernetes, Ansible, Git; PostgreSQL, MySQL, MongoDB.

References

Available on request.