Faik Kerem Ors

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Education

Purdue University West Lafayette, IN, US
Ph.D. in Computer Science *Aug. 2022 – May. 2027 (Anticipated)*
***GPA**: 3.90/4.00, **Academic Advisor**: Prof. Elisa Bertino*
***Focus**: Network Security*

Sabancı University Istanbul, Turkey
M.Sc. in Computer Science and Engineering *Sep. 2019 – Jan. 2022*
***GPA**: 3.87/4.00, **Thesis Advisor:** Prof. Albert Levi*
***Thesis**: Data Driven Intrusion Detection for 6LoWPAN Based IoT Systems*

Sabancı University Istanbul, Turkey
B.Sc. in Computer Science and Engineering *Sep. 2014 – June 2019*
Minor in Mathematics
GPA**: 3.86/4.00, **Ranked 3rd

Research Interests

Network security, cellular networks security, protocol reverse engineering, IoT security and privacy, systems and software security, machine learning for security.

Research Experience

Ph.D. Researcher Aug. 2022 – Present
Purdue University - Computer Science *West Lafayette, IN, USA*

- Developing methods to find vulnerabilities in cellular network security, specifically in Open Radio Access Networks (O-RAN), using large-scale language models and formal verification tools.
- Analyzing the security and privacy of communication protocols, particularly unknown or proprietary protocols, using deep learning techniques.
- Developing models and tools to systematically infer protocol structures and behaviors to enhance security analysis, anomaly detection, and formal verification.
- Integrating machine learning, program analysis, and systems security to improve protocol analysis frameworks.
- Advisor: Prof. Elisa Bertino

Research Assistant Aug. 2025 – Present
Purdue University - Electrical and Computer Engineering *West Lafayette, IN, USA*

- Designing and implementing Rust-based asynchronous clients for sensor data acquisition and device communication over TCP for traffic speed deflectometer devices.
- Integrating new sensor systems into a modular, real-time pipeline using NATS JetStream and FlatBuffers for efficient data streaming and processing.
- Building frontend applications and APIs to visualize and manage roadway sensor data for the Indiana Department of Transportation (INDOT).
- Supervisor: Prof. James V. Krogmeier

Research Assistant – Technical Team Lead June 2025 – Aug. 2025
Purdue University - OATS, IoT4Ag, Agricultural and Biological Engineering *West Lafayette, IN, USA*

- Installed and configured LoRaWAN-based soil and weather sensors, including the deployment of various LoRaWAN gateways as part of the SPRING (Solar-Powered Remote IoT4Ag Network Gateway) inventory.
- Implemented communication interfaces, sensor data decoding logic in Chirpstack, RedPanda Connect flows, TimescaleDB tables, and Grafana dashboards for data pipelining and visualization.
- Built a public-facing dashboard to visualize real-time sensor data and deliver interactive learning content for students, teachers, and the public.

- Collaborated in weekly meetings, shared technical design decisions, and co-developed lecture material, visuals and tutorials that demystify IoT systems for middle-school students.

Research Intern June 2020 – June 2021
Purdue University - GoBoiler Internship Program (Selected Attendee) *West Lafayette, IN, USA*

- Implemented a secure and robust context-based group pairing scheme for heterogeneous IoT devices.
- Accepted to IEEE S&P (Oakland) 2023, second cycle.
- Supervisor: Dr. Z. Berkay Celik

Summer Research Intern June 2018 – Sep. 2018
Technical University of Berlin *Berlin, Germany*

- Implemented deep learning models to optimize the bitrate selection decision on DASH clients.
- Reviewed the literature and delivered an overview presentation on Dynamic Streaming over HTTP (DASH).
- Attended M.Sc. lectures and seminars with the focus on content delivery techniques.
- Supervisors: Dr. Suzan Bayhan and Prof. Abdel-Karim Al-Tamimi

Peer-Reviewed Publications

- Habiba Farrukh*, Muslum Ozgur Ozmen*, **Faik Kerem Ors**, Z. Berkay Celik. One Key to Rule Them All: Secure Group Pairing for Heterogeneous IoT Devices. In *IEEE Security and Privacy (S&P '23)*. – **Cited by 26**
- **Faik Kerem Ors**, and Albert Levi. Data driven intrusion detection for 6LoWPAN based IoT systems. In *Ad Hoc Networks, 143*, pages 103-120, April 2023. – **Cited by 13**
- **Faik Kerem Ors**. Data Driven Intrusion Detection for 6LoWPAN Based IoT Systems. *M.Sc. Thesis*, December 2021.
- **Faik Kerem Ors**, Mustafa Aydin, Aysu Bogatarkan, and Albert Levi. Scalable Wi-Fi Intrusion Detection for IoT Systems. In *11th IFIP International Conference on New Technologies, Mobility and Security (Security Track)*, Paris, France, April 2021. – **Cited by 9**
- **Faik Kerem Ors**, Suveyda Yeniterzi, and Reyyan Yeniterzi. Event Clustering within News Articles, In *Proceedings of the Workshop on Automated Extraction of Socio-political Events from News 2020*, pages 63–68, Marseille, France, May 2020. European Language Resources Association (ELRA). (Proposed system ranked 1st in the shared task). – **Cited by 28**

Conference Presentations

- Scalable Wi-Fi Intrusion Detection for IoT Systems. In *11th IFIP International Conference on New Technologies, Mobility and Security (Security Track)*, Paris, France, April 2021.
- Event Clustering within News Articles, In *Proceedings of the Workshop on Automated Extraction of Socio-political Events from News 2020*, pages 63–68, Marseille, France, May 2020. European Language Resources Association (ELRA).

Teaching Experience

Teaching Assistant Aug. 2022 – May 2025
Purdue University *West Lafayette, IN, US*

- Held office hours, supervised student projects, designed and graded exams and assignments.
- Courses (reverse chronological): Computer Security (CS 426; Spring 2025, Fall 2023, Spring 2023), Cryptography (CS 555; Fall 2024), Information Security (CS 526; Spring 2024), Security Analytics (CS 529; Fall 2022)

Guest Lecturer Fall 2023
CS 426, Purdue University *West Lafayette, IN, US*

- Gave lectures on buffer overflows, return oriented programming, SQL injection, and cross-site scripting.

Teaching Assistant Feb. 2018 – Jan. 2022
Sabancı University *Istanbul, Turkey*

- Held office hours, designed and graded assignments, conducted lab sessions and supervised student projects.
- Courses (reverse chronological): Computer Networks (CS 408; 2022, 2021, 2020), Computer and Network Security (CS 432), Machine Learning (CS 412), Advanced Programming (CS 204), Database Systems (CS 306)

Services

- External Reviewer in NDSS 2026, 2025, 2024
- External Reviewer in IEEE S&P 2026, 2024
- External Reviewer in USENIX Security 2024
- Reviewer in IEEE Transactions on Information Forensics and Security (TIFS) 2024
- Reviewer in ITU Journal on Future and Evolving Technologies (ITU J-FET) 2022
- Reviewer in IEEE International Conference on Communications (ICC) 2022
- Reviewer in IEEE Conference on Communications and Network Security (CNS) 2021
- Reviewer in The Computer Journal (Oxford University Press) 2021, 2020

Honors and Awards

- Tuition waiver and Graduate Teaching Assistantship offer by Purdue University for graduate studies (2022 – 2027).
- Full tuition waiver and stipend by Sabancı University for graduate studies (2019 – 2021).
- Dean's High Honor List, Sabancı University (2016 – 2019).
- Recipient of Sakıp Sabancı Encouragement Scholarship, which covers 100% of tuition fee, because of academic excellence (2016 – 2019).

Technical Skills

Programming Languages: Python, C++, C, C#, Java, SQL
Frameworks and Libraries: PyTorch, Tensorflow, Pandas, NumPy, Scikit-learn, Keras, Flask, Django
Operating Systems: Unix, Linux, macOS, Windows
Technologies: git, MySQL, PostgreSQL, Docker, JUnit, Android Studio, Chirpstack, Redpanda Connect, Grafana
Tools: Wireshark, Metasploit, Hashcat, Burp Suite, Nmap, SQLmap, Wfuzz, IDA, Binwalk, The Harvester, Dirbuster

Additional Work Experience

R&D Engineer Feb. 2019 – Aug. 2019
PRODAFT *Istanbul, Turkey*

- Implemented a machine learning based phishing detection system from scratch.
- Developed RESTful microservices to be integrated into the threat intelligence ecosystem of the company.

Security Research Intern July 2017 – Sep. 2017
PRODAFT *Istanbul, Turkey*

- Worked on penetration testing and developed penetration testing tools in Python.