

# Faik Kerem Örs

fkerem@sabanciuniv.edu | fkerem.github.io | linkedin.com/in/keremors | github.com/fkerem

## EDUCATION

### Sabanci University

*M.Sc. in Computer Science and Engineering*

**CGPA:** 3.87/4.00, **Thesis Advisor:** Prof. Albert Levi

**Thesis:** Data Driven Intrusion Detection for 6LoWPAN Based IoT Systems

Istanbul, Turkey

Sep. 2019 – Present

### Sabanci University

*B.Sc. in Computer Science and Engineering, Minor in Mathematics*

**CGPA:** 3.86/4.00, **Ranked 3rd**

Istanbul, Turkey

Sep. 2014 – June 2019

## RESEARCH INTERESTS

IoT/CPS security and privacy; wireless network security; systems and software security; privacy of machine learning applications; adversarial machine learning.

## RESEARCH EXPERIENCE

### Research Intern

*Purdue University - GoBoiler Internship Program (Selected Attendee)*

June 2020 – June 2021

West Lafayette, IN, USA

- Implemented a secure and robust context-based sensor pairing scheme in the smart home context.
- Implemented the signal processing module and extracted the time series features in Python.
- Submitted to USENIX Security '22, Summer Deadline.
- Worked remotely due to COVID-19 circumstances under the supervision of Dr. Z. Berkay Celik.

### Summer Research Intern

*Technical University of Berlin*

June 2018 – Sep. 2018

Berlin, Germany

- Implemented deep learning models (LSTMs) 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 especially on content delivery techniques.
- Supervisors: Dr. Suzan Bayhan and Prof. Abdel-Karim Al-Tamimi

## PUBLICATIONS

- **Faik Kerem Örs**, Mustafa Aydın, Aysu Boğatarkan, 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.
- **Faik Kerem Örs**, Süveyda Yeniterzi and Reyhan 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).

## 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

*Sabanci University*

Feb. 2018 – Present

Istanbul, Turkey

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

## SERVICES

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- Reviewer in IEEE Conference on Communications and Network Security (CNS) – 2021
- Reviewer in The Computer Journal (Oxford University Press) – 2020, 2021

## HONORS AND AWARDS

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- 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

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**Programming Languages:** Python, C++, C, C#, Java, SQL

**Frameworks and Libraries:** Pandas, NumPy, Scikit-learn, Keras, PyTorch (basic), Tensorflow (basic), Flask, Django

**Operating Systems:** Unix, Linux, Windows

**Technologies:** git, MySQL, PostgreSQL, Docker, Azure, JUnit, Android Studio

## ADDITIONAL WORK EXPERIENCE

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### R&D Engineer

Feb. 2019 – Aug. 2019

*PRODAFT Cyber Intelligence and Cyber Security Services*

*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 Cyber Intelligence and Cyber Security Services*

*Istanbul, Turkey*

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

## SELECTED PROJECTS

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### Wi-Fi Intrusion Detection for IoT Systems

Dec. 2019 – June 2020

- Implemented a machine learning based Wi-Fi intrusion detection system using the network traffic data collected from IP cameras.
- Our multiclass classifier that detects 6 attack types achieved 96.85% test accuracy.

### Commonsense Validation and Explanation

Oct. 2019 – Feb. 2020

- Applied state-of-the-art transformer-based NLP models (e.g., BERT, ALBERT and RoBERTa) on the commonsense validation and explanation task (Task 4) conducted as part of SemEval 2020.
- My model that utilizes pre-trained ALBERT has been ranked 11th out of 39 submissions officially.

### Neural Online Signature Verification System

Oct. 2019 – Feb. 2020

- Implemented an online signature verification system leveraging siamese networks on SUSIG database.
- Our model achieved 94% accuracy on the test set that consists of 450 genuine, 1000 skilled forgery and 900 random forgery signatures which were tested against the reference signatures in the form of an input pair.

### Intrusion Detection for 6LoWPAN Based IoT Systems – *Bachelor’s Thesis*

Sep. 2018 – May 2019

- Implemented and simulated three types of RPL routing attacks (flooding, sinkhole and blackhole) on top of 6LoWPAN protocol stack using Contiki operating system.
- Implemented a machine learning model that detects malicious nodes which realize the aforementioned routing attacks in different experimental settings (e.g., co-presence of different attack types, different sensor placements).