Faik Kerem Örs

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EDUCATION

Sabancı University   Istanbul, Turkey

M.Sc. in Computer Science and Engineering   *Sep. 2019 – Present*

CGPA: *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, Minor in Mathematics   *Sep. 2014 – June 2019*

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

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   June 2020 – Present

Purdue University - GoBoiler Internship Program (Selected Attendee)   *West Lafayette, IN, USA*

- Implementing 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.
- Working remotely due to COVID-19 circumstances under the supervision of Dr. Z. Berkay Celik.

Summer Research Intern   June 2018 – Sep. 2018

Technical University of Berlin   *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 *NTMS 2021 (Security Track)*, Paris, France, April 2021.

- **Faik Kerem Örs**, Süveyda Yeniterzi and Reyyan Yeniterzi. Event Clustering within News Articles, *Proceedings of the Automated Extraction of Socio-Political Events from News (AESPEN) Workshop as part of the Language Resources and Evaluation Conference (LREC)*, 2020. (Proposed system ranked 1st in the shared task).

CONFERENCE PRESENTATIONS

- Event Clustering within News Articles, *Automated Extraction of Socio-Political Events from News (AESPEN) Workshop as part of the Language Resources and Evaluation Conference (LREC)*, 2020.

TEACHING EXPERIENCE

Teaching Assistant   Feb. 2018 – Present

Sabancı University   *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

- Reviewer in The Computer Journal (Oxford University Press) – 2020, 2021

Honors and Awards

- 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: 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

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

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).