Alperen Keleş

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Personal Information

Github: github.com/alpaylan
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Education

Bachelor of Engineering - Computer Engineering (3.68/4.0) Expected: June 2021
Middle East Technical University, Ankara, Turkey
- METU is a highly competitive technical university with a rigorous amount of coursework and some of the best students in the country. I got accepted to METU CENG with 1713rd place at the university entrance exams that 2 Million students enter. With a CGPA of 3.68/4.0, I am 12th in my year, and my CGPA on departmental courses is 3.77/4.0.

Relevant Coursework

Discrete Computational Structures, Abstract Machines and Formal Languages, Language Processors, Introduction to Artificial Intelligence, Logic for Computer Science, Computer Aided Formal Verification

Research and Publications

DroPPPP: A P4 Approach to Mitigating DoS Attacks in SDN
The 20th World Conference On Information Security Applications
G. Simsek, H. Bostan, A. Sarica, E. Sarikaya, A. Keles, P. Angin, H. Alemdar, E. Onur
August 21-24, 2019 Jeju Island, Korea

Protocol Verification Language
IEEE/ACM International Symposium on Code Generation and Optimization Student Research Competition
Alperen Keles
February 22 - 26, 2020 San Diego, CA, USA

Protocol Verification Language
CAV 2021 : International Conference on Computer Aided Verification *(Pending Submission)*
Alperen Keles, Ozan Akin, Ozan Sazak, Umut Sahin
July 18 - 23, 2021 Los Angeles, USA

Work Experience

University of Maryland - Maryland Cybersecurity Center(MC2) Maryland, USA(Remote)
- Research Intern July 2020 - Present

- Work on Automatic Exploit Generation by Automated Detection of Heap Exploitation Primitives using Inductive Program Synthesis techniques.
- Design a domain-specific language for automatically synthesizing heap allocator implementations.
- Work on counter-example guided inductive synthesis techniques for generating heap allocator models in the designed language.
- Work on Automated Code Repair for Vulnerability Patches Using Program Synthesis Approach Sketching

- MC2 is a pioneering research laboratory at UMD. Each year, a selected few(4-5) interns are accepted to Summer@MC2 where they conduct cutting-edge research with Tudor Dumitras and his Ph.D. students. I was the first person to ever be admitted to the program from METU, and I currently continue to work with Tudor part time.

Havelsan Ankara, Turkey
- Candidate Engineer July 2020 - Present

- Worki on creating showcases for 5G ICT Technologies.
- Design Peer Assisted Parking(PAP) system for automated parking assistance in smart cities.
- Participate in Ericson Innovation Awards 2020 with Peer Assisted Parking.

Emproof — Bochum, Germany
- *Remote Embedded Security Engineer* — January 2020 - April 2020
- *Embedded Security Engineering Intern* — June 2019 - September 2019

- Work on translation validation of transformations done by binary obfuscation techniques against reverse engineering practices in embedded software.
- Write a lifter from Armv6-M Instruction Set Architecture to an Intermediate Language(IL) of our design.
- Write an emulator for the IL mentioned above.
- Work on Microsoft Research's SMT Solver Z3 for translation validation.

Middle East Technical University — Ankara, Turkey
- *C Programming Laboratory Student Assistant* — February 2019 - June 2019

Projects

Protocol Verification Language
-*Open Source Domain Specific Language for Network Protocol Verification*
- A domain specific programming language for network protocol implementations to be formally verified against their specifications.
- Compiler is written in Rust.
- Program verification is done by a built-in verification engine inside the compiler.
- Project is a finalist of HAVELSAN(Air Electronics Industry) Cyber-Security Acceleration Program as 1 of 8 projects.
- Funded by AdımODTU Undergraduate Research Initiative.
- Falling Walls Ankara Winner and Finals Participant
- German Innovation Week Participant

Network Intrusion Detection System
-*As Part of Guided Research with A Faculty Member*
- Analyzed and surveyed publicly available Network Intrusion Data Sets.
- Worked on issues such as high class imbalance with techniques that contain over and under sampling, weight balancing.
- Worked with Python Scikit-Learn and Imblearn Libraries on Decision Trees and Random Forest Models
- Wrote a research paper on the study.

Fact Checker's Tool
-*NLP/Graph Approaches Based System for Use of Fact Checking Organizations*
- Fact Checker's Tool is a project that uses Twitter user network graph and NLP techniques for helping Fact Checking organizations strengthen their operations.
- Coronathon Turkey Finalist
- Participant of Factory - Incubator Program of Teyit, Fact Checking Organization -

Awards and Achievements
- ACM-ICPC SEERC Participant(2018)
  -*Took part in the regional contest in Ukraine as a member of one of the 2 teams from METU.*
- TUBITAK National Secondary School Research Projects Contest Regional Finals(2015)

Programming Languages

C++, *Python*, *C*, *Rust*, *MATLAB*

Languages

Turkish: Native, *English:* Proficient(TOEFL: 109)

Hobbies

Writing, Debating, Chess and Billiards

Volunteer Experience

IEEE METU Student Branch
- *Vice Chairperson of Executive Board* — May 2019 - May 2020
- *Editor of Biltek* — May 2018 – May 2019
- *Webmaster* — May 2018 – May 2019
- *Member* — October 2017 – May 2018

ACM METU Student Chapter
- *Vice President* — October 2017 – Present