

Ismet Burak Kadron

kadron.burak@gmail.com — kadron@cs.ucsb.edu

375 Cannon Green Dr. Apt B
93117, Goleta, CA, USA

Phone (US): +1 (805) 284 6115
Phone (Turkey): +90 (536) 868 4474

Research Interests

My research interests are on program analysis, cyber security, machine learning (ML), information theory. I'm focused on finding methods on automating side-channel analysis and vulnerability detection at the moment. I am also interested in using formal methods for verifying safety and security of ML systems.

Education

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| 2016 - 2021
(est.) | PhD, Computer Science, University of California Santa Barbara, CA, United States. |
| 2010 - 2014 | BSc (Honor Graduate), Computer Engineering, Boğaziçi University, İstanbul, Turkey. |
| 2012 Fall | (Erasmus Program) Computer Science, École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland |

Work Experience

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| 2017 - present | Graduate Student Researcher , University of California Santa Barbara. Verification Lab (PI Tevfik Bultan).
Working on developing side channel analysis techniques with a focus on automation. Represented Verification Lab in the 6th and last DARPA STAC competition. |
| Summer 2018 | Research Intern , Carnegie Mellon University.
Verified Software Group (PI Corina S. Păsăreanu).
Worked on valid input generation and fuzzing for side channel analysis and neural network analysis using formal methods.
Represented the group in the 5th DARPA STAC competition, with great results. |
| 2016 - 2018 | Teaching Assistant , University of California Santa Barbara.
Designed and graded homeworks and exams. Conducted discussion sections. |
| 2015 | Teaching Assistant , Boğaziçi University.
Designed and graded homeworks and exams. Helped with teaching.
Conducted problem solving sessions. |
| 2013 - 2015 | Part-time Systems Engineer , AirTies Wireless Networks.
Worked on developing an Android application for network measurements and implemented automatic wireless channel switch algorithms. |

Publications

- S. Saha, W. Eiers, **İ.B. Kadron**, T. Bultan, *Incremental Attack Synthesis*. Accepted to Java PathFinder (JPF) Workshop 2020.
- D. Gopinath, M. Zhang, K. Wang, **İ.B. Kadron**, C.S. Păsăreanu, S. Khurshid, *Symbolic Execution for Importance Analysis and Adversarial Generation in Neural Networks*. Accepted to the 30th International Symposium on Software Reliability Engineering (ISSRE 2019).
- N. Rosner, **İ.B. Kadron**, L. Bang, T. Bultan, *Profit: Detecting and Quantifying Side Channels in Networked Applications*. Proceedings of the 26th Annual Network and Distributed System Security Symposium (NDSS 2019).
- S. Saha, **İ.B. Kadron**, W. Eiers, L. Bang, T. Bultan, *Attack Synthesis for Strings using Meta-Heuristics*. ACM SIGSOFT Software Engineering Notes 43(4): 56 (2018). Presented in Java PathFinder (JPF) Workshop 2018.

Research Projects

Profit	Developed a black-box approach and a tool for detecting and quantifying side-channel information leaks in networked applications that communicate over encrypted streams using network profiling and statistical analysis of profiles.
Attack Synthesis	Developed an approach to synthesize side-channel attacks for functions with side-channel vulnerabilities using symbolic execution, model counting and meta-heuristics (simulated annealing or genetic algorithms).

Main Programming Languages

Python, Java, Scala, Prolog, Matlab, Bash.

Spoken Languages

Fluent in English and Turkish.

Service

- Local Arrangements & Finance Chair for ISSTA 2020
- Student Volunteer for ISSTA 2017 and co-located SPIN 2017
- Co-reviewer for ASE 2018, ESEC/FSE 2019 and ICSE 2020

Teaching Experience

Teaching Assistant

Spring 2018	UCSB CS138 Formal Languages and Automata
Winter 2018	UCSB CS130B Data Structures and Algorithms II
Fall 2017	UCSB CS138 Formal Languages and Automata
Spring 2017	UCSB CS162 Programming Languages
Winter 2017	UCSB CS162 Programming Languages
Fall 2016	UCSB CS130A Data Structures and Algorithms I
Fall 2015	BU CMPE540 Principles of Artificial Intelligence
Spring 2015	BU CMPE482 Numerical Linear Algebra