Khaled Ahmed

Contact Information	6335 Thunderbird Cres., V6T 2G9, Vancouver, BC, Canada,	+1 (778) 751-8116 khaledea@ece.ubc.ca k.e.elsayed@gmail.com

Residency — Permanent resident in Canada, awaiting Canadian citizenship.

Education

Electrical and Computer Engineering, University of British Columbia, Canada
Doctorate of Philosophy in Electrical and Computer Engineering (Sept. 2017 to date)
- Development of dynamic taint analysis and slicing tools for Android and Java programs.
- Reverse engineering and analysis of Android malware that infiltrated the Google Play store.
- Development of automated dynamic analysis tools for Android malware detection.
- Grade: A+ (Average: 89.1%)

Faculty of Engineering, Alexandria University, Alexandria, Egypt
Masters of Science in Electrical and Electronic Engineering (Sept. 2014 to July 2017)
- CDMA Network-on-chip design.
- Software/Hardware Co-design of cryptographic applications.
- Grade: Distinction with degree of honor (GPA: 3.95/4)

Bachelor's Degree in Electrical and Electronic Engineering (Sept. 2009 to July 2014)
- Thesis: ASIC implementation of TMS320C25 DSP (With Si-Ware Systems and FabCat)
- Grade: Distinction with degree of honor (GPA: 3.94/4, **Rank**: 2^{nd}/332)

Papers in Software Engineering

Michael Cao*, **Khaled Ahmed***, Julia Rubin, "Spoiled Apples Ruin the Bunch: Anatomy of Google Play Malware", *The 44th ACM/IEEE International Conference on Software Engineering (ICSE), 2022. *Equal contribution*

Khaled Ahmed, Mieszko Lis, Julia Rubin, "MANDOLINE: Dynamic Slicing of Android Applications with Trace-Based Alias Analysis", *IEEE International Conference on Software Testing, Verification and Validation (ICST),* ***Distinguished Paper Award****, 2021*

Khaled Ahmed, Mieszko Lis, Julia Rubin, "Slicer4J: A Dynamic Slicer For Java", *ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE), tools track, 2021*

Michael Cao, Sahar Badihi, **Khaled Ahmed**, Peiyu Xiong, Julia Rubin. "On Benign Features in Malware Detection". *The 35th IEEE/ACM International Conference on Automated Software Engineering (ASE), short paper, 2020*

Papers in Digital Hardware Design

Khaled E. Ahmed, Mohamed R. Rizk, Mohammed M. Farag, "Overloaded CDMA Crossbar for Network-On-Chip", *IEEE Transactions on Very Large Scale Integration Systems, Volume: PP, Issue: 99.*

Khaled E. Ahmed, Mohamed R. Rizk, Mohammed M. Farag, "Overloaded CDMA Interconnect for Network-on-Chip (OCNoC)", *IEEE International Conference on Reconfigurable Computing and FPGAs (ReConfig), 2016.*

Khaled E. Ahmed, Mohamed R. Rizk, Mohammed M. Farag, "Aggregated CDMA Crossbar for Network-on-Chip", *International Conference on Microelectronics (ICM), 2016.* **Best poster award**

Ahmed S. Eissa, Mahmoud A. Elmohr, Mostafa A. Saleh, **Khaled E. Ahmed**, Mohammed M. Farag, "Hardware Implementation of A SHA-3 Application-Specific Instruction Set Processor", *International Conference on Microelectronics (ICM), 2016.*

Mostafa Medra, **Khaled E. Ahmed**, Timothy N. Davidson, "MOSIC: A New Ordering for OSIC MIMO Detection", *IEEE International workshop on Signal Processing advances in Wireless Communications (SPAWC), 2016.*

Ahmed S. Eissa, Mahmoud A. Elmohr, Mostafa A. Saleh, **Khaled E. Ahmed**, Mohammed M. Farag, "SHA-3 Instruction Set Extension for A 32-bit RISC Processor Architecture", *IEEE International Conference on Application-specific Systems, Architectures and Processors, 2016.*

Khaled E. Ahmed, Kareem M. Attiah, Ahmed S. Eltrass, "Multiple Signal Classification Algorithm Compensated by Extended Kalman Particle Filtering for Wi-Fi Through Wall Multi-Target Tracking", *IEEE-APS Topical Conference on Antennas and Propagation in Wireless Communications, 2016.*

Khaled E. Ahmed, Mohammed M. Farag, "Hardware/Software Co-Design of A Dynamically Configurable SHA-3 System-on-Chip (SoC)", *IEEE International Conference on Electronics, Circuits, and Systems (ICECS), 2015.*

Khaled E. Ahmed, Mohammed M. Farag, "Parallel Overloaded CDMA Interconnect (OCI) Bus Architecture for On-Chip Communications", *IEEE International Conference on Electronics, Circuits, and Systems (ICECS), 2015.*

Khaled E. Ahmed, Mohammed M. Farag, "Enhanced Overloaded CDMA Interconnect (OCI) Bus Architecture for on-Chip Communication", *IEEE Annual Symposium of High Performance Interconnects (HOTI), 2015.*

Khaled E. Ahmed, Mohammed M. Farag, "Overloaded CDMA Bus Topology for MPSoC Interconnect", *IEEE International Conference on Reconfigurable Computing and FPGAs (ReConfig), 2014.*

Research Internships

Ecole Polytechnique Federale de Lausanne (EPFL), Lausanne, Switzerland
(July 2014 to Sept. 2014)

- Exploiting parallelism in hardware accelerators using High Level Synthesis.

Teaching Experience

University of British Columbia, Vancouver, Canada (Winter 2018 to date)

- Software Engineering (CPEN 321)
- Computing Systems I (CPEN 211)
- Computer Architecture (CPEN 411)
- Computing Systems II (CPEN 212)

Alexandria University, Alexandria, Egypt (Fall 2014 to Spring 2017)

- x86 Microprocessors
- Logic Circuit Design
- Modeling and Design of VLSI Integrated Circuits
- Computer Architecture
- Digital Integrated Circuits
- Semiconductor Devices

Online course: Hardware Design using VHDL vlsiacademy.org/vhdl1.html

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Open-Source Contributions

- *Mandoline* (https://github.com/resess/Mandoline/): an accurate, low-overhead dynamic slicer for Android. Mandoline automatically generates a backward dynamic slice from a user selected executed statement and variables used in the statement. Mandoline is the first dynamic slicer for Android apps that accounts for data flows through fields and framework methods.
- *Slicer4J* (https://github.com/resess/Slicer4J/): a version of *Mandoline* designed for Java executables. It relies on soot, a popular Java analysis framework which currently supports instrumenting programs compiled with up to Java 9.
- *DCC/L* (https://github.com/khaled-e-a/Hardware-Software-SHA-3-HLS): a configurable hardware accelerator for SHA3 algorithm. The accelerator is written in C and deployable on FPGA using High Level Synthesis.

Talks

Invited Talks

- Tech talk "Malware Detection and Analysis", Google, 2022.
- Guest speaker in "Introduction to Program Analysis Techniques" workshop, Huawei, 2022.
- Guest lecturer in CPEN 400P: Program Analysis for Reliability and Security, UBC, 2022.

Conference Talks

Presented my work at:

- ICSE 2022
- CSER Meeting 2021
- ESEC/FSE 2021
- ICST 2021

Awards

- Natural Sciences and Engineering Research Council - Canada Graduate Scholarships (NSERC CGS-D)
- Four Year Fellowship (FYF) from the University of British Columbia
- Graduate Support Initiative (GSI) from the University of British Columbia

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Service

- Reviewer: OOPSLA 2022 External Review / Artifact Evaluation
- Student Volunteer: ICSE 2022

References

Available upon request
