Kia **Shakiba**

Ph.D. Computer Engineering Student · IEEE Student Member

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Education

University of Toronto

Toronto, ON

Doctor of Philosophy (Computer Engineering) — *2019 - present*

- Computer Engineering Research Group (EECG) under the supervision of Professor Michael Stumm
- Specializing in the area of cache optimization for cloud server infrastructures
- Completed one year in the M.A.Sc. program (2018 - 2019) before transferring into the Ph.D. program
- Received a full funding research package

University of Waterloo

Waterloo, ON

Bachelor of Applied Science (Computer Engineering Honours Co-operative Program) — *2013 - 2018*

- Graduated with distinction
- Focused on software development courses
- Completed six co-op terms in the area of software development

Teaching History

Computer Fundamentals (APS 105) × 6 Terms

Toronto, ON

Teaching Assistant - University of Toronto — *January 2019 - April 2022*

- Undergraduate-level course regarding introductory C programming
- Led weekly tutorials in which students could ask questions about course content and problem solutions would be demonstrated
- Conducted lab sessions (both online and in person) in which students would be provided feedback regarding program structure and design
- Worked with students one-on-one as needed to ensure a full understanding of the course material
- Effectively communicated to students areas in which their programming could be improved
- Evaluated the midterm and final examinations

Operating Systems (ECE 344) × 3 Terms

Toronto, ON

Teaching Assistant - University of Toronto — *September 2019 - April 2022*

- Undergraduate-level course regarding operating system design
- Designed questions on the midterm and final examinations
- Assisted students with assignments during lab hours to ensure full understanding of the lab material
- Evaluated midterm and final examinations

Technical Entrepreneurship (CSC 2702)

Toronto, ON

Teaching Assistant - University of Toronto — *May 2021 - July 2021*

- Graduate-level course regarding entrepreneurship from a technical perspective
- Mentored students using experience gained from running my own technical startup
- Held weekly office hours where students were encouraged to discuss their technical business ventures
- Evaluated student presentations and gave feedback regarding their communication skills

Creative Applications for Mobile Devices (ECE 1778) × 2 Terms

Toronto, ON

Teaching Assistant - University of Toronto — *January 2020 - April 2021*

- Graduate-level course regarding research applications of mobile applications
- Evaluated assignments and in-class group project presentations
- Effectively coordinated with the professor and other TA to ensure students achieve the specifications outlined in their projects
- Assisted students one-on-one as required to ensure their success in the course

Programming Languages (ECE 326) × 2 Terms

Toronto, ON

Teaching Assistant - University of Toronto — *September 2020 - December 2021*

- Undergraduate-level course regarding modern programming languages with a focus in Python, Rust, and C++
- Adapted traditionally in-person weekly lab sessions to an online environment in which students could ask for help with their lab code
- Led weekly online collaborative tutorial sessions about the C++ programming language
- Evaluated course assessments and the midterm and final examinations
- Integrated instructor-friendly examination tool, Examify, to allow students to write comprehensive programming examinations online

Algorithms and Data Structures (ECE 345) × 2 Terms

Toronto, ON

Teaching Assistant - University of Toronto

September 2019 - December 2020

- Undergraduate-level course regarding algorithm and data structure design
- Familiarized myself with the course content to effectively provide feedback to students on their assignments
- Evaluated course assessments and the midterm and final examinations

Da Vinci Engineering Enrichment Program (DEEP) – "Cracking the Code"

Toronto, ON

Instructor - University of Toronto

June 2019 - July 2019

- Designed and taught a course about cryptography for senior, academically advanced high school students
- Simplified complex cryptographic concepts to be understood by students with no background in cryptography
- Taught Python to students, many of which had no previous programming experience, to be used in their final projects
- Outlined public and private key encryption and authentication, hash functions, PRNGs, blockchains, attack methods, and general privacy topics
- Developed lecture content and labs to engage students in the content with an emphasis on active learning
- Coordinated with teaching assistants to provide feedback and assist the students
- Managed course budget to accommodate for material needs in the course

Relevant Courses

Parallel Programming (ECE 1747)

Toronto, ON

University of Toronto

September 2020 - December 2020

- Parallel programming methods
- Message-passing schemes
- Reviewed literature on various web-server optimization architectures
- Developed parallel database caching system to improve query performance

Seminar in Identity, Privacy, and Security (ECE 1518)

Toronto, ON

University of Toronto

January 2020 - April 2020

- Privacy implications of modern technology in society
- Blockchain technology
- Biometric user validation
- Explored Android security vulnerabilities through final research project

Parallel Computer Architecture and Programming (ECE 1755)

Toronto, ON

University of Toronto

January 2019 - April 2019

- Cache coherency protocols
- Network-on-chip packet handling
- Low-level parallel computer architecture
- Explored a power-optimized network-on-chip simulation by reducing inter-node connections through final research project

Creative Applications for Mobile Devices (ECE 1778)

Toronto, ON

University of Toronto

January 2019 - April 2019

- Android programming
- "Fake news detection" application created for Android devices

Programming Massively Parallel Multiprocessors and Heterogeneous Systems (ECE 1782)

Toronto, ON

University of Toronto

January 2019 - April 2019

- CUDA programming
- GPU architecture and optimization techniques when implementing programs on GPU devices
- Created and optimized a GPU video encoder as final research project

Quality of Service (ECE 1771)

Toronto, ON

University of Toronto

September 2018 - December 2018

- Packet handling in computer networks
- Fairness protocols in network traffic management
- Dynamics in networks
- Explored mobile cloud computing through final research paper

Computer Security, Cryptography, and Privacy (ECE 1776)

Toronto, ON

University of Toronto

September 2018 - December 2018

- Security in machine learning algorithms
- Utilized Python to reduce the vulnerability of machine learning algorithms to adversarial misclassification attacks

Cryptography and System Security (ECE 409)

Waterloo, ON

University of Waterloo

January 2018 - April 2018

- Arithmetics of finite fields
- Hashing (SHA1, SHA3)
- Symmetric-key ciphers (A5, RC4, WG, DES, AES, MAC)
- Public-key ciphers (RSA, DH, DSS, ECC, LWE, FHE)
- Network security (IPsec, SSL/TLS, SSH, S/MIME)
- Wireless security (3G/4G-LTE, WEP, CCMP)

Computer Security (ECE 458)

Waterloo, ON

University of Waterloo

May 2017 - August 2017

- Control hijacking and side channel attacks
- Concolic testing
- SAT solvers
- Stream and block ciphers (OTP, AES/DES, 3DES)
- Data integrity (MAC)
- Hash functions
- RSA and Diffie-Hellman key exchange

Programming for Performance (ECE 459)

Waterloo, ON

University of Waterloo

January 2017 - April 2017

- Multi-threading/multi-processing
- Non-blocking IO
- Automatic compiler optimization
- OpenMP
- OpenCL

Software Design and Architecture (ECE 452)

Waterloo, ON

University of Waterloo

May 2017 - August 2017

- Software development cycle
- Software design patterns
- Android application development with React Native

Computer Networks (ECE 358)

Waterloo, ON

University of Waterloo

January 2017 - April 2017

- Protocols and design of network systems
- Congestion control and traffic management

Database Systems (ECE 356)

Waterloo, ON

University of Waterloo

January 2017 - April 2017

- Data models
- Database architecture
- Schema design
- Queried a MySQL database to retrieve and alter data

Compilers (ECE 351)

Waterloo, ON

University of Waterloo

May 2016 - August 2016

- Lexical analysis
- Regular expressions
- Used Java to create a compiler for a simple language

Operating Systems and Systems Programming (ECE 254)

Waterloo, ON

University of Waterloo

September 2015 - December 2015

- Thread management
- Development of multi-threaded applications in C
- Designed a simple operating system
- Memory allocation algorithms
- Data storage and retrieval algorithms

Algorithms and Data Structures (ECE 250)

Waterloo, ON

University of Waterloo

January 2015 - April 2015

- Implemented various data structures using C++
- Analyzing runtime and efficiency of algorithms
- Recursive algorithms

Digital Computers (ECE 222)

Waterloo, ON

University of Waterloo

January 2015 - April 2015

- Memory management with registers
- High-level computer system design
- Implementation of various programs in Assembly

Engineering Design with Embedded Systems (ECE 155)

Waterloo, ON

University of Waterloo

May 2014 - August 2014

- Created an Android application to capture and analyze data from various phone sensors
- Software design, implementation, testing, and maintenance

Computer Programming (ECE 150)

Waterloo, ON

University of Waterloo

September 2013 - December 2013

- Created simple data structures
- Developed knowledge of C# programming language

Computer Proficiency

Languages	JavaScript, TypeScript, C, C++, C#, Java, Python, PHP, Assembly, VHDL, Visual Basic, Igor
Web	HTML5, CSS3, Markdown
Databases	PostgreSQL, Redis, MySQL
Frameworks	Node.js, React.js, Express.js, Webpack, React Native, WebSockets, Sass, jQuery, Bootstrap
DevOps	AWS, Bluemix (IBM Cloud), Heroku, Nginx, Apache
Version Control	Git, Subversion
Tools	LaTeX, pgAdmin, Adobe Photoshop/Lightroom

Experience

Examify Inc.

Toronto, ON

Chief Executive Officer

September 2019 - present

- Developing full-stack features on an online exam platform aimed to help classes administer high-quality, electronic exams
- Creating an application which will create dynamic exams, allowing professors to test students' hand-on knowledge of the course material
- Reducing the amount of TA hours required to evaluate assessments using real-time feedback
- Completed the University of Toronto Hatchery Nest incubator program and won third place at the final competition ($10,000)
- Implemented a Node.js server with React.js front-end and PostgreSQL database running on AWS Cloud resources

Advice to a Scientist

Boston, MA

Web Developer

August 2018 - present

- Developing full-stack features on a knowledge sharing website for current and future academics
- Working remotely with a team in the Massachusetts Institute of Technology (MIT)
- Implemented a Node.js server with React.js front-end and PostgreSQL database

International Business Machines (IBM)

Markham, ON

Software Developer

January 2016 - December 2017

- Developed front-end features for cloud-computing platform (Bluemix.net) DevOps catalog
- Implemented React.js to create maintainable, state-based website
- Developed various components currently used on the production Bluemix website
- Improved client cache-busting system to allow simpler deployments of new features

Rogers Media

Toronto, ON

Web Developer

May 2015 - August 2015

- Developed back-end features for 680News centered around commenting (mark as offensive functionality)
- Improved load time for various pages by realizing better caching solutions and reducing code inefficiencies
- Worked on various teams alongside other developers

Rogers Media

Toronto, ON

Web Developer

September 2014 - December 2014

- Developed the front-end for various pages on the new 680News (navigation menu, footer bar, home page, audio page, and category page) and CityNews (navigation menu, footer bar, home page, and category page) websites
- Implemented Bootstrap to create modern, responsive pages using PHP as the back-end system
- Worked closely with Wordpress as a content manager
- Created various server-side data manipulation functions

Environment Canada *Toronto, ON*

Computer Support and Web Developer *January 2014 - April 2014*

- Designed catalogue web-page (both front-end/back-end) to read and present daily valid information from database
- Provided on-site technical support for co-workers
- Designed input webpage to append data to the database
- Created various server-side data analysis functions

Canada Smart Home Solutions *Toronto, ON*

Website and Software Developer *January 2013 - May 2013*

- Designed and maintained company website using Joomla website editor
- Provided on-site technical assistance for home automation and security equipment
- Demonstrated adaptability when faced with a demanding, fast-paced learning environment

Projects

Shakiba Lab (https://shakiba.bme.ubc.ca/) *Toronto, ON*

Full Stack Developer *January 2020 - present*

- Created the lab website for and Assistant Professor at the School of Biomedical Engineering, University of British Columbia
- Worked with a designer to create a modern, responsive, and functional website

trippit *Toronto, ON*

Full Stack Developer *May 2015 - July 2017*

- Co-founded the project as the lead web developer and full-stack server administrator
- Rented and implemented a fully-functional Nginx web-server with Node.js, and database functionality
- Implemented various synchronous and asynchronous data manipulation pages including a fully-functional RESTful API
- Closely worked with a web designer to create web pages

KreateNew *Toronto, ON*

Full Stack Developer *February 2014 - May 2015*

- Co-founded the project as the primary developer
- Built and programmed a fully-functional Apache web-server using LAMP (including SSL implementation)
- Designed and implemented all the front-end/back-end programs related to the page

Volunteering and Extracurricular

Mentor *Toronto, ON*

Engineer-in-Residence Program *July 2021 - June 2022*

- Partnering with an Ontario grade-school to encourage students to explore stem-related topics while working alongside their teacher

Instructor *Toronto, ON*

JA Canada *October 2017*

- Represented IBM at a local (GTA) elementary school conducting a seminar regarding entrepreneurism for a fifth-grade class

Logistics Volunteer *Toronto, ON*

StemCellTalks *March 2012, 2013*

- Assisted with setup and preparation for the annual StemCellTalks symposium for high school students

Awards and Scholarships

2019 **Hatchery Nest $10,000 Third-Place Prize**, University of Toronto *Toronto, ON*

2019 **Ph.D. Research Funding Package**, University of Toronto *Toronto, ON*

2018 **M.A.Sc. Research Funding Package**, University of Toronto *Toronto, ON*

2013 **Waterloo Merit Scholarship**, University of Waterloo *Waterloo, ON*