

# KAREEM SHEHATA

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## Profile

Advanced cryptography and machine learning security researcher with over 20 years of experience in engineering, research, and leadership roles. Combines deep technical expertise with a track record of innovation in both academia and industry.

## Skills

- Cryptography and secure protocols.
- Machine learning security.
- Software Engineering in C/C++, Java, C#/VB.NET, Python.
- Team leadership, mentorship, and project management.

## Awards

- 2025 Crypto Valley Conference Best Student Paper
- 2023 NUS School of Computing Teaching Fellowship
- 2022 NUS School of Computing Teaching Excellence Award
- 2020 NUS Graduate Research Scholarship

## Experience

### **Graduate Researcher, National University of Singapore, 2020-2025**

- Advanced research on cryptography and ML security topics, with papers on verifiable weighted secret sharing, watermarking ML generated images, and ML proof-of-learning security.
- Head TA for courses on modern cryptography (CS4230/5430), systems security (CS3235), and data structures and algorithms in C++ (CS2040C).
- For full academic CV, including publications, talks, and teaching details, see <https://kareem.shehata.ca/cv>

### **Senior Software Engineer, Google Belo Horizonte, BR, 2015-2019**

- Led design and implementation of new service within Google Web Search for getting direct user feedback at scale that does not require analysts to code.
- Designed improvements to Google Web Search for handling language mismatches between query and interface languages, implemented on the actual Google search stack, and ran experiments to determine effectiveness.
- Led the design and implementation of a new data pipeline for analyzing data logged from the world's largest knowledge app, handling billions of interactions and petabytes of data per day.

### **Lead Software Developer, Clearpath Robotics Kitchener, ON, 2014-2015**

- Led team to develop large autonomous vehicle for mining industry.
- Planned project, including scope, resources, and timing.
- Worked directly with customer to determine true requirements.
- Designed software architecture and planned implementation.
- Guided and reviewed implementation of the team's software code.
- Implemented comm. structures, sensor interfaces, and vehicle control.
- Key technologies: ROS, Robot Simulation, Embedded Linux, Lidar, Radar, Python, embedded C/C++.

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## **Chief Technology Officer, Dandy** Kitchener, ON, 2013-2014

- Led development of new mobile app through the Dandy process.
- Selection of development team, product design, and implementation on iOS, Blackberry, Android, and backend services.
- Simultaneously managed development of the Dandy web platform, including new features and maintenance.
- Evaluated app ideas and provided feedback to the CEO and partners.
- Key technologies: iOS, Android, BlackBerry, Objective-C, Java (Android), C++ (Blackberry), Python, virtual web services.

## **Senior Software Developer, Aeryon Labs** Waterloo, ON, 2008-2013

- Led software development for Scout and SkyRanger platforms.
- Implemented Agile development process and continuous integration.
- Designed and implemented new architecture for Mission Control Station, including pluggable mapping and video support.
- Evaluated and lead introduction of new platform technology including Python, messaging services, and logging services.
- Key technologies: Embedded Linux, Linux Kernel Drivers, network programming and messaging, IP video (RTP/RTSP), Python, Java/Swing, embedded C/C++.

## **Software Development Consultant** Waterloo/Toronto, ON, 2006-2007

- Provided software and systems development expertise to client projects.
- Projects typically involved development of new or modification of existing software systems based on customer specifications.
- Clients included: JMP Engineering, Scotiabank Jamaica, Parmalat, TMMC.
- Key technologies: C#, MS SQL Server, Oracle PL/SQL.

## **Control Systems Software Designer, ATS Advanced Systems**

Cambridge, ON, 2004-2006

- Led software development for several advanced automation projects.
- Designed architecture and implemented software control solutions.
- Key technologies: QNX, software PLCs, Visual Basic, machine vision, Stäubli robotics, motion control.

## **Hardware Designer, Archonix** Toronto, ON, 2003-2004

- Hardware designer for aerospace APU motor controller and simulator.
- Designed and oversaw construction of motor simulator project, including requirements analysis, circuit design, construction, and verification.
- Key technologies: analog and digital circuit and board design, VHDL.

## **Education**

National University of Singapore — M.Comp., Infocomm Security, expected 2025, GPA 3.94

University of Waterloo — B.A.Sc. Electrical Engineering, 2003  
Honours With Distinction, Computer Engineering Option, GPA 3.78

## **Talks and Publications**

See <https://kareem.shehata.ca> for a comprehensive list.