

# JASON JASKOLKA | Ph.D., P.Eng.

Department of Systems and Computer Engineering – Carleton University  
Canal Building 6206 – 1125 Colonel By Drive – Ottawa, ON K1S 5B6 – Canada

☎ +1 613-520-2600 x. 1873 • ✉ jason.jaskolka@carleton.ca • 🌐 www.carleton.ca/jaskolka/

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## EDUCATION

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### Ph.D. Software Engineering

McMaster University

Advisor: Ridha Khedri

Thesis: *On the Modelling, Analysis, and Mitigation of Distributed Covert Channels*

Sep. 2010–Mar. 2015  
Hamilton, ON, Canada

### M.A.Sc. Software Engineering

McMaster University

Advisor: Ridha Khedri

Thesis: *Modeling, Analysis, and Detection of Information Leakage via Protocol-Based Covert Channels*

May 2009–Sep. 2010  
Hamilton, ON, Canada

### B.Eng. Software Engineering & Game Design (Summa Cum Laude)

McMaster University

Sep. 2005–Apr. 2009  
Hamilton, ON, Canada

## OTHER CREDENTIALS

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### Certificate in University Teaching

Carleton University

Dec. 2017  
Ottawa, ON, Canada

## EMPLOYMENT HISTORY

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### ACADEMIC EMPLOYMENT

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#### Visiting Professor

Département Mathématiques et Informatique, Université Toulouse–Jean Jaurès

July 2021–June 2022  
Toulouse, France

- Accepted for the academic year 2020/21 (but was delayed due to COVID-19); Extended for the academic year 2021/22

#### Assistant Professor

Department of Systems and Computer Engineering, Carleton University

July 2017–Present  
Ottawa, ON, Canada

Tenure Status: *Tenure-Track*

- Director of the **Cyber Security Evaluation and Assurance (CyberSEA) Research Lab**
- Research involves cyber security, software engineering, distributed systems, and formal specification and verification in an effort to develop systematic and rigorous approaches for evaluating and assuring the security of software-dependent systems
- Teaching courses related to software engineering and computer security

#### U.S. Department of Homeland Security Cybersecurity Postdoctoral Scholar

Center for International Security and Cooperation, Stanford University

Jan. 2016–June 2017  
Stanford, CA, USA

- Worked on the project “Cybersecurity Assurance For Critical Infrastructure” to design and develop critical infrastructure cyber security assessment methodologies and associated modeling and simulation environments
- Investigated formal methods-based approaches for identifying and analyzing security vulnerabilities arising from implicit component interactions in critical distributed systems, networks, and infrastructures
- Conducted full-time research in an interdisciplinary research environment comprised of perspectives from areas of technology, science, international security, and policy

**Postdoctoral Research Associate***McMaster Centre for Software Certification, McMaster University*Aug. 2015–Dec. 2015  
*Hamilton, ON, Canada*

- Part of the embedded software research thrust area for the FCA-McMaster Automotive Partnership Canada – Leadership in Automotive Powertrain (APC-LEAP) project
- Studied the application of model-driven software engineering and development practices for real-world problems for automotive industrial applications, specifically in collaboration with Fiat Chrysler Automobiles
- Investigated the development of solutions for cyber security issues in automotive engineering

**Postdoctoral Fellow***Department of Mathematics, Statistics & Computer Science, St. Francis Xavier University*Apr. 2015–Aug. 2015  
*Antigonish, NS, Canada*

- Worked on a research project on the application of software engineering architectural design patterns to systematically guide the design and development of maintainable, extendable, and reusable ontologies
- Engaged in interactions with graduate students on issues dealing with their research and thesis writing

**Research Assistant***Department of Computing and Software, McMaster University*May 2008–Aug. 2008  
*Hamilton, ON, Canada*

- Designed, documented, and implemented a software tool for the analysis and verification of cryptographic protocols

**OTHER EMPLOYMENT**

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**Engineering Systems Assistant***Ministry of Transportation of Ontario (MTO)*Apr. 2007–Aug. 2007  
*St. Catharines, ON, Canada*

- Managed the MTO Registry, Appraisal, and Qualification (RAQS) system
- Created statistical reports and tables using data collected from the RAQS system
- Wrote software business requirements documents for system enhancements
- Tested and verified software modules and enhancements using various techniques

**RESEARCH INTERESTS, AREAS, AND THEMES**

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My research is motivated by the need for the advancement of rigorous and practical approaches to address increasingly critical issues in designing, implementing, evaluating, and assuring the safe, secure, and reliable operation of software-dependent systems. I conduct research that spans the areas of cyber security evaluation and assurance, threat modeling, security-by-design, and formal methods and data-driven approaches for software and security engineering. I am interested in exploring new ideas, techniques, and tools that can support cyber security evaluation and assurance activities and advance security-by-design approaches leading to improved system security and higher system confidence.

**RESEARCH SPECIALIZATION KEYWORDS**

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|------------------------|---------------------------|--------------------------------------|
| ○ cyber security       | ○ software engineering    | ○ software architecture and design   |
| ○ assurance            | ○ formal methods          | ○ cyber-resilience                   |
| ○ evaluation           | ○ model-based engineering | ○ critical infrastructure protection |
| ○ security-by-design   | ○ data-driven approaches  | ○ cyber-physical systems             |
| ○ security engineering | ○ algebraic approaches    | ○ distributed systems                |

## RESEARCH FUNDING

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### AWARDED

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<b>Mitacs Accelerate</b> <i>Principal Investigator (Industry Partner: BBA (BankingBook Analytics))</i> Mitacs (Grant) "Cyber 360: A Cyber Risk Visualization and Action Platform"	2022-2023 \$45,000
<b>Mitacs Accelerate</b> <i>Principal Investigator (Industry Partner: Telesat)</i> Mitacs (Grant) "Model-Based Security Compliance-By-Design for Low-Earth Orbit Satellite Operations Segments"	2021-2023 \$180,000
<b>SSHRC Partnership Grant</b> <i>Co-Applicant (Principal Investigator: Benoît Dupont [Université de Montréal])</i> Social Sciences and Humanities Research Council of Canada (Grant) "The Human-Centric Cybersecurity Partnership"	2021-2026 \$2,500,000 Share: \$100,000
<b>NSERC Discovery Grant</b> <i>Principal Investigator</i> Natural Sciences and Engineering Research Council of Canada (Grant) "Comprehensive Security Assurance Solutions for Software-Dependent Systems"	2019-2024 \$115,000
<b>NSERC Discovery Launch Supplement</b> <i>Principal Investigator</i> Natural Sciences and Engineering Research Council of Canada (Grant) "Comprehensive Security Assurance Solutions for Software-Dependent Systems"	2019 \$12,500
<b>Canadian Safety and Security Program (CSSP)</b> <i>Co-Applicant (Principal Investigator: Mohamed Ibnkahla)</i> Defence Research and Development Canada (Grant) "System-Level Security for IoT-enabled e-Health Systems"	2019-2022 \$1,178,170 Share: \$150,000
<b>Critical Infrastructure Resilience Institute (CIRI) Research Project</b> <i>Principal Investigator</i> United States Department of Homeland Security, Science & Technology Directorate (Research Contract) "Cybersecurity Assurance for Critical Infrastructure"	2018-2022 \$293,179
<b>Carleton University Start-Up Fund</b> <i>Principal Investigator</i> Carleton University (Grant)	2017 \$55,000

### DECLINED

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<b>Mourou-Strickland 2020 Mobility Program</b> <i>Principal Investigator</i> French Embassy in Canada—Cultural and Scientific Services (Travel Grant) "An Integrated Approach for Specifying, Detecting, and Treating Security Threats in Software Architectures"	2020 \$TBD
<b>5G (ENCQOR) Academic Technology Development Program</b> <i>Co-Applicant (Principal Investigator: Ana-Maria Cretu)</i> Ontario Centres of Excellence (OCE) (Grant) "A Machine Learning-Based Framework for Cybersecurity Threat Monitoring"	2019 \$130,000 Share: \$70,000

## COMPLETED

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<b>CU Development Grants – NSE</b>	2018
<i>Principal Investigator</i>	\$10,000
Carleton University (Grant)	
“Validating the Effectiveness of Security Design Patterns”	
<b>Natural Resources Canada Research Project</b>	2018
<i>Principal Investigator</i>	\$23,000
Natural Resources Canada (Research Contract)	
“Assurance Cases for Security and Resilience of Advanced Metering Infrastructure”	

## HONOURS AND AWARDS

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<b>New Faculty Excellence in Teaching Award</b>	2021
<i>Carleton University</i>	
Awarded annually to recognize faculty members who, in their first five years at Carleton University, have demonstrated commitment to teaching excellence and innovation.	
<b>Best Paper Award</b>	2020
<i>19th International Conference on Software and Systems Reuse (ICSR 2020)</i>	
Awarded to the best paper (“Reusable Formal Models for Threat Specification, Detection, and Treatment”) of the 19th International Conference on Software and Systems Reuse as selected by the technical program committee.	

## TEACHING ACTIVITIES

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### COURSES TAUGHT

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The following courses were taught at Carleton University, Ottawa, ON, Canada.

Course Code	Course Title	Term	Level	Enrolment
SYSC 4810	Introduction to Network and Software Security	Fall 2021	UG	206
SYSC 5807X	Advanced Topics in Computer Systems: Security Engineering	Winter 2021	G	41
SYSC 3120	Software Requirements Engineering	Winter 2021	UG	135
SYSC 4810	Introduction to Network and Software Security	Fall 2020	UG	161
SYSC 5807X	Advanced Topics in Computer Systems: Security Engineering	Winter 2020	G	46
SYSC 3120	Software Requirements Engineering	Winter 2020	UG	104
SYSC 4810	Introduction to Network and Software Security	Fall 2019	UG	103
SYSC 5807X	Advanced Topics in Computer Systems: Security Engineering	Winter 2019	G	46
SYSC 3120	Software Requirements Engineering	Winter 2019	UG	96
SYSC 4810	Introduction to Network and Software Security	Fall 2018	UG	53
SYSC 3020	Introduction to Software Engineering	Summer 2018	UG	56
SYSC 3120	Software Requirements Engineering	Winter 2018	UG	70

### CONTRIBUTIONS TO TEACHING

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<b>Developed New Graduate Course: Security Engineering</b>	2019
<i>Department of Systems and Computer Engineering, Carleton University</i>	<i>Ottawa, ON, Canada</i>
o Course offered for the first time as SYSC 5807X in Winter 2019	
<b>Developed New Undergraduate Course: Introduction to Network and Software Security</b>	2018
<i>Department of Systems and Computer Engineering, Carleton University</i>	<i>Ottawa, ON, Canada</i>
o Course offered for the first time as SYSC 4810 in Fall 2018	

## STUDENT SUPERVISION & TRAINING

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Level	In-Progress	Completed
Postdoctoral Fellows	1	0
Doctorate Students	2	0
Master's Students	5	2
Undergraduate Students	0	8
Visiting Scholars	0	3
Master of Engineering Projects	0	1
Fourth-Year Undergraduate Projects	20 (5 projects)	65 (15 projects)

### POSTDOCTORAL FELLOWS

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#### IN-PROGRESS

**Quentin Rouland** Nov. 2021–Present  
Postdoctoral Fellow, *Carleton University* *Ottawa, ON, Canada*  
Project Title: *Model-Based Security Compliance-By-Design for Low-Earth Orbit Satellite Operations Segments*

### DOCTORATE STUDENTS

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#### IN-PROGRESS

**Loïc Thierry** Sep. 2021–Present  
Ph.D. Electrical and Computer Engineering (Software Engineering), *Carleton University* *Ottawa, ON, Canada*  
Cotutelle at *Université Toulouse–Jean Jaurès* *Toulouse, France*  
Co-supervisor: *Brahim Hamid*  
Thesis: *TBD*

**Xinrui Zhang** Sep. 2020–Present  
Ph.D. Electrical and Computer Engineering, *Carleton University* *Ottawa, ON, Canada*  
Thesis Title: *TBD*

### MASTER'S STUDENTS

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#### IN-PROGRESS

**Georgi Zakurdaev** Sep. 2021–Present  
M.A.Sc. Electrical and Computer Engineering (Software Engineering), *Carleton University* *Ottawa, ON, Canada*  
Thesis Title: *TBD*

**James Baak** Sep. 2020–Present  
M.A.Sc. Electrical and Computer Engineering, Ericsson Fellow, *Carleton University* *Ottawa, ON, Canada*  
Thesis Title: *TBD*

**Bohdana Sereda** Sep. 2020–Present  
M.A.Sc. Electrical and Computer Engineering, *Carleton University* *Ottawa, ON, Canada*  
Thesis Title: *TBD*

**Luke Newton** Sep. 2020–Present  
M.A.Sc. Electrical and Computer Engineering (Data Science), *Carleton University* *Ottawa, ON, Canada*  
Thesis Title: *TBD*

**Alvi Jawad** Jan. 2020–Present  
M.A.Sc. Electrical and Computer Engineering, *Carleton University* *Ottawa, ON, Canada*  
Thesis Title: *A Cyberattack Impact Analysis Approach for Industrial Control Systems*

## COMPLETED

- Joe Samuel** Sep. 2019–Sep. 2021  
M.A.Sc. Electrical and Computer Engineering (Data Science), *Carleton University*  
Thesis Title: *A Data-Driven Approach to Evaluate the Security of System Designs*  
Present Position: Software Development Engineer - Security, Ford Motor Company, Canada  
Ottawa, ON, Canada
- Thomas Sattolo** Sep. 2018–Jan. 2021  
M.A.Sc. Electrical and Computer Engineering (Data Science), *Carleton University*  
Thesis Title: *Real-Time Detection of Storage Covert Channels*  
Present Position: Cybercrime Analyst, National Cybercrime Coordination Unit, RCMP, Canada  
Ottawa, ON, Canada

## UNDERGRADUATE STUDENTS

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### COMPLETED

- Georgi Zakurdaev** May 2021–Aug. 2021  
NSERC USRA Undergraduate Student Researcher, *Carleton University*  
Project Title: *Security and Resilience for Budget-Constrained IoT-Enabled Smart Cities*  
Ottawa, ON, Canada
- Syed Salman Haider** Sep. 2020–Apr. 2021  
I-CUREUS Undergraduate Student Researcher, *Carleton University*  
Project Title: *Model-Level Vulnerability Identification*  
Ottawa, ON, Canada
- Kamaluddin Shakiri** May 2020–Aug. 2020  
I-CUREUS Undergraduate Student Researcher, *Carleton University*  
Project Title: *Systematic Evaluation of Security Vulnerability Scoring Frameworks*  
Ottawa, ON, Canada
- Khalil Aalab** Jan. 2020–Apr. 2020  
I-CUREUS Undergraduate Student Researcher, *Carleton University*  
Project Title: *A Data-Driven Security Evaluation Framework for System Designs*  
Ottawa, ON, Canada
- Pruthvi Chivukula** May 2019–Aug. 2019  
FED Undergraduate Student Research Award Recipient, *Carleton University*  
Project Title: *Evaluating the Effectiveness of Security Design Patterns*  
Ottawa, ON, Canada
- Matthew Siu** May 2019–July 2019  
First-Year Research Intern, *Carleton University*  
Project Title: *Exploring the State-of-the-Art of Security Assurance Cases*  
Ottawa, ON, Canada
- Dylan Léveillé** May 2018–July 2018  
First-Year Research Intern, *Carleton University*  
Project Title: *Specification Generator for C<sup>2</sup>KA Tool Support*  
Ottawa, ON, Canada
- Idir Zerrouk** May 2018–July 2018  
First-Year Research Intern, *Carleton University*  
Project Title: *Specification Generator for C<sup>2</sup>KA Tool Support*  
Ottawa, ON, Canada

## VISITING SCHOLARS

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### COMPLETED

- Bohdana Sereda** June 2019–Aug. 2019  
Mitacs Globalink Intern, *Carleton University*  
Home Institution: *Taras Shevchenko National University of Kyiv*  
Project Title: *Threat Modelling in Support of Security-By-Design*  
Ottawa, ON, Canada  
Kyiv, Ukraine
- Yang Quentin** Apr. 2019–Aug. 2019  
Visiting Scholar, *Carleton University*  
Home Institution: *L'École Polytechnique Université Paris-Saclay*  
Project Title: *Methods for System Level Security Evaluation*  
Ottawa, ON, Canada  
Palaiseau, France

**Maxime Buyse** Apr. 2019–Aug. 2019  
Visiting Scholar, *Carleton University* Ottawa, ON, Canada  
Home Institution: *L'École Polytechnique Université Paris-Saclay* Palaiseau, France  
Project Title: *Automated Theorem Proving for Distributed System Cybersecurity*

## MASTER OF ENGINEERING PROJECTS

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### COMPLETED

**Vidushi Gupta** Jan. 2020–Apr. 2020  
MNET Project (ITEC 5905), *Carleton University* Ottawa, ON, Canada  
Project Title: *Comparative Analysis of Existing Approaches for Evaluating Cloud Security*

## FOURTH-YEAR UNDERGRADUATE ENGINEERING PROJECTS

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### IN-PROGRESS

**Cyber Intent Analysis and Prediction** Sep. 2021–Apr. 2022  
*Department of Systems and Computer Engineering, Carleton University* Ottawa, ON, Canada  
Student Team Members: *Sarah Abdallah, Jonah Gaudet, Alexandre Hassan, Baillie Noell*

**A Platform for Managing Security Evaluations** Sep. 2021–Apr. 2022  
*Department of Systems and Computer Engineering, Carleton University* Ottawa, ON, Canada  
Student Team Members: *Zijun Hu, Tiantian Lin, Jiawei Ma, Ruixuan Ni*

**Cyber Risk Dashboard** Sep. 2021–Apr. 2022  
*Department of Systems and Computer Engineering, Carleton University* Ottawa, ON, Canada  
Student Team Members: *Vasugi Ganeshram, Judy Hamwi, Aedyn Ladd, Sama Mahmoud*

**Generating and Simulating Attack Scenarios from Attack Tree Analysis** Sep. 2021–Apr. 2022  
*Department of Systems and Computer Engineering, Carleton University* Ottawa, ON, Canada  
Student Team Members: *Eric Leung, Dylan Léveillé, Anil Menon, Anandarajah Yathuvaran*

**Data-Driven Software Security Assessment** Sep. 2021–Apr. 2022  
*Department of Systems and Computer Engineering, Carleton University* Ottawa, ON, Canada  
Student Team Members: *Khalil Aalab, John Breton, Samuel Gamelin, Mohamed Radwan*

### COMPLETED

**Software Security Metrics Calculator** Sep. 2020–Apr. 2021  
*Department of Systems and Computer Engineering, Carleton University* Ottawa, ON, Canada  
Student Team Members: *Paul Hewson, Anthony Maevski-Popov, Andrew Moore, Isaac Pruner, Kamaluddin Shakiri*

**Detection of Firewall Configuration Errors** Sep. 2020–Apr. 2021  
*Department of Systems and Computer Engineering, Carleton University* Ottawa, ON, Canada  
Student Team Members: *Hoang Bui, Michael Fan, Tamer Ibrahim, Mrunal Patel, Souheil Yazji*

**Threat Modeling for Security Requirements Management** Sep. 2020–Apr. 2021  
*Department of Systems and Computer Engineering, Carleton University* Ottawa, ON, Canada  
Student Team Members: *Britney Baker, Mathew Smith, Samantha Tripp*

**Mitigating Inference Attacks in Big Data Centres** Sep. 2020–Apr. 2021  
*Department of Systems and Computer Engineering, Carleton University* Ottawa, ON, Canada  
Student Team Members: *Sarah Lamonica, Mounica Pillarisetty, Shoana Sharma*

**Predicting and Preventing Social Engineering Attacks** Sep. 2020–Apr. 2021  
*Department of Systems and Computer Engineering, Carleton University* Ottawa, ON, Canada  
Student Team Members: *Sai Vikranth Desu, Tarun Kalikivaya, Dhyan Pathak, Abhiram Santhosh*

**A Toolkit for Constructing Covert Channels** Sep. 2019–Apr. 2020  
*Department of Systems and Computer Engineering, Carleton University* Ottawa, ON, Canada  
Student Team Members: *Ryan Abraham, Michael Dysart, Dharina Hanumunthadu, Fahid Mannan, Jackson Schoenermarck*



<b>Attack Surface Analysis and Measurement</b>	Sep. 2019–Apr. 2020
<i>Department of Systems and Computer Engineering, Carleton University</i>	<i>Ottawa, ON, Canada</i>
Student Team Members: Benjamin Bichel, Omar Dawoud, Darren Holden, Gabrielle Hubert, Jack MacDougall	
<b>CANImmune Web Client Redesign</b>	Sep. 2019–Apr. 2020
<i>Department of Systems and Computer Engineering, Carleton University</i>	<i>Ottawa, ON, Canada</i>
Student Team Members: Tanisha Garg, Ahmed Sakr, Devon Verge	
<b>Confidentiality Preservation in Big Data Centres</b>	Sep. 2019–Apr. 2020
<i>Department of Systems and Computer Engineering, Carleton University</i>	<i>Ottawa, ON, Canada</i>
Student Team Members: Tashfiq Akhand, Hasan Issa, Aleksandar Savic, Calvin Soong, Ryan Zheng	
<b>A Configurable Platform for Developing and Deploying Blockchains</b>	Sep. 2018–Apr. 2019
<i>Department of Systems and Computer Engineering, Carleton University</i>	<i>Ottawa, ON, Canada</i>
Student Team Members: Zaidoon Abd Al Hadi, Kunall Banerjee, Damanjit Bhangoo, Aaron Bungay, Darshpreet Grewal	
<b>An Image Recognition System for Digitizing Technical Documentation using LaTeX</b>	Sep. 2018–Apr. 2019
<i>Department of Systems and Computer Engineering, Carleton University</i>	<i>Ottawa, ON, Canada</i>
Student Team Members: Arun Galva, Blessing Omotayo, Sean Tohidi	
<b>Security Threat Modelling for IoT-based Smart City Applications</b>	Sep. 2018–Apr. 2019
<i>Department of Systems and Computer Engineering, Carleton University</i>	<i>Ottawa, ON, Canada</i>
Student Team Members: Viraj Dave, Nicholas Dmytryk, Brendan Lucas, Chibueze Ndudirim, Survesh Srinivasan	
Co-Supervisor: Mohamed Ibnkahla	
<b>Who's Got The Kids?</b>	Sep. 2018–Apr. 2019
<i>Department of Systems and Computer Engineering, Carleton University</i>	<i>Ottawa, ON, Canada</i>
Student Team Members: Alexandre Cournoyer, Daniel Gravel, Bhavik Tailor, Tanzim Zaman	
Co-Supervisor: Rebecca Bromwich (Law & Legal Studies, Carleton University)	
<b>Secure Electronic Communication Platform</b>	Sep. 2017–Apr. 2018
<i>Department of Systems and Computer Engineering, Carleton University</i>	<i>Ottawa, ON, Canada</i>
Student Team Members: Mohamed Dahrouj, Ali Farah, Tosin Oni, Lava Tahir, Vincent Vu	
<b>Transportation Worker Identification Credential (TWIC) Access Control System</b>	Sep. 2017–Apr. 2018
<i>Department of Systems and Computer Engineering, Carleton University</i>	<i>Ottawa, ON, Canada</i>
Student Team Members: Amer Binmuhana, Liam Disley, Craig Isesele, Abinayen Sivakumar, Daniel Srouji	

## THESIS EXAMINATION COMMITTEES

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### EXAMINER – EXTERNAL

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<b>Quentin Rouland</b>	Oct. 2021
Ph.D. Informatique et Télécommunications (Thesis Defence)	<i>Toulouse, France</i>
<i>Institut de Recherche en Informatique de Toulouse, Université Toulouse 3 Paul Sabatier</i>	
Thesis Title: <i>Rigorous Development of Secure Architecture within the Negative and Positive Statements: Properties, Models, Analysis and Tool Support</i>	
<b>Ahn Duy Vu</b>	Aug. 2019
Ph.D. Computer Science (Thesis Defence)	<i>Hamilton, ON, Canada</i>
<i>Department of Computing and Software, McMaster University</i>	
Thesis Title: <i>Software Approaches to Optimize Energy Consumption for a Team of Distributed Autonomous Mobile Robots</i>	

### EXAMINER – INTERNAL

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<b>Hemant Gupta</b>	June 2021
Ph.D. Electrical and Computer Engineering (Comprehensive Examination: Proposal Defence)	<i>Ottawa, ON, Canada</i>
<i>School of Computer Science, Carleton University</i>	
Thesis Title: <i>Designing Security for the MQTT-SN Messaging Protocol</i>	



**Yu Zhang** Dec. 2018  
M.A.Sc. Aerospace Engineering (Thesis Defence) Ottawa, ON, Canada  
*Department of Mechanical and Aerospace Engineering, Carleton University*  
Thesis Title: *Performance Estimation and Fault Diagnostics for the Starter of Auxiliary Power Unit*

## EXAMINER – MEMBER OF THE JOINT INSTITUTE

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**Abdorrahim Bahrami** July 2021  
Ph.D. Computer Science (Thesis Defence) Ottawa, ON, Canada  
*School of Electrical Engineering and Computer Science, University of Ottawa*  
Thesis Title: *Modelling and Verifying Dynamic Properties of Neuronal Networks in Coq*

**Rajitha Hathurusinghe** Aug. 2020  
M.A.Sc. Electrical and Computer Engineering (Thesis Defence) Ottawa, ON, Canada  
*School of Electrical Engineering and Computer Science, University of Ottawa*  
Thesis Title: *Building A PII Recognizer in a Privacy Preserved Manner Using Automated Annotation and Federated Learning*

**Abdorrahim Bahrami** June 2019  
Ph.D. Computer Science (Comprehensive Examination: Proposal Defence) Ottawa, ON, Canada  
*School of Electrical Engineering and Computer Science, University of Ottawa*  
Thesis Title: *Modelling and Verifying Dynamic Properties of Neural Networks in Coq*

**Fatemeh Cheraghchi** June 2019  
Ph.D. Computer Science (Thesis Defence) Ottawa, ON, Canada  
*School of Electrical Engineering and Computer Science, University of Ottawa*  
Thesis Title: *Maritime Transportation Optimization Using Evolutionary Algorithms in the Era of Big Data and Internet of Things*

**Maryam Hezaveh** May 2019  
Ph.D. Electrical and Computer Engineering (Thesis Defence) Ottawa, ON, Canada  
*School of Electrical Engineering and Computer Science, University of Ottawa*  
Thesis Title: *Privacy Preservation for Nearby-Friend and Nearby-Places Location-Based Services*

## EXAMINER – MEMBER OF THE DEPARTMENT

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**Micael Vezina** Sep. 2021  
Ph.D. Electrical and Computer Engineering (Comprehensive Examination: Proposal Defence) Ottawa, ON, Canada  
*Department of Systems and Computer Engineering, Carleton University*  
Thesis Title: *A Framework for Qualitative Reasoning About Uncertainty in Jason*

**Joseph Boi-Ukeme** Sep. 2020  
Ph.D. Electrical and Computer Engineering (Comprehensive Examination: Proposal Defence) Ottawa, ON, Canada  
*Department of Systems and Computer Engineering, Carleton University*  
Thesis Title: *A Robust Discrete Event Method for the Design of Cyber-Physical Systems*

**Cristina Ruiz Martín** Mar. 2018  
Ph.D. Electrical and Computer Engineering (Thesis Defence) Ottawa, ON, Canada  
*Department of Systems and Computer Engineering, Carleton University*  
Thesis Title: *A Framework to Study the Resilience of Organizations: A Case Study of a Nuclear Emergency Plan*

**Mohamed Abdelsalam** Jan. 2018  
Ph.D. Electrical and Computer Engineering (Thesis Defence) Ottawa, ON, Canada  
*Department of Systems and Computer Engineering, Carleton University*  
Thesis Title: *Network Application Design Challenges and Solutions in SDN*

## EXAMINATION COMMITTEE CHAIR

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**Khalid Almahrog** May 2021  
Ph.D. Electrical and Computer Engineering (Comprehensive Examination: Proposal Defence) Ottawa, ON, Canada  
*Department of Systems and Computer Engineering, Carleton University*  
Thesis Title: *Optimal Detection in the Presence of Non-Gaussian Jamming*

<b>Mohamed Abdulla Kalandar Mohideen</b> M.A.Sc. Electrical and Computer Engineering (Thesis Defence) <i>Department of Systems and Computer Engineering, Carleton University</i> Thesis Title: <i>A Graph-Based Indexing Technique for Efficient Searching in Large Scale Textual Documents</i>	Sep. 2020 Ottawa, ON, Canada
<b>Alexander Fernandes</b> M.A.Sc. Biomedical Engineering (Thesis Defence) <i>Department of Systems and Computer Engineering, Carleton University</i> Thesis Title: <i>Classification of Individual Finger Flexions Using Ultrasound Radiofrequency Signals</i>	Aug. 2020 Ottawa, ON, Canada
<b>Wafa Hasanain</b> Ph.D. Electrical and Computer Engineering (Comprehensive Examination: Proposal Defence) <i>Department of Systems and Computer Engineering, Carleton University</i> Thesis Title: <i>Analysis and Maintainability of Complex Industrial Test Code Using Clone Detection</i>	Nov. 2018 Ottawa, ON, Canada
<b>Irem Bor-Yaliniz</b> Ph.D. Electrical and Computer Engineering (Comprehensive Examination: Proposal Defence) <i>Department of Systems and Computer Engineering, Carleton University</i> Thesis Title: <i>Using Mobility for Agility: Enhancing Wireless Networks with Aerial Access Nodes and User Involvement</i>	July 2018 Ottawa, ON, Canada
<b>Hoda Khalil</b> Ph.D. Electrical and Computer Engineering (Comprehensive Examination: Proposal Defence) <i>Department of Systems and Computer Engineering, Carleton University</i> Thesis Title: <i>FSM Testing Approach Based on Transition Trees and Complete Round Trip Paths Testing Criteria</i>	Mar. 2018 Ottawa, ON, Canada
<b>Yaser Fouad</b> Ph.D. Electrical and Computer Engineering (Comprehensive Examination: Proposal Defence) <i>Department of Systems and Computer Engineering, Carleton University</i> Thesis Title: <i>Number-Theoretic Sequence Design for Uncoordinated Resource Block Assignments in Relay-Assisted Machine-Type Communication Systems</i>	Dec. 2017 Ottawa, ON, Canada
<b>Nikhilesh Pradhan</b> M.A.Sc. Biomedical Engineering (Thesis Defence) <i>Department of Systems and Computer Engineering, Carleton University</i> Thesis Title: <i>Evaluation of the Signal Quality of Wrist-Based Photoplethysmography</i>	Dec. 2017 Ottawa, ON, Canada

## SERVICE & OUTREACH

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### COMMUNITY

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<b>Scientific Advisory Committee on Digital Health Technologies (SAC-DHT)</b> Ad Hoc Member, <i>Health Canada</i>	Oct. 2018–Oct. 2020 Ottawa, ON, Canada
<ul style="list-style-type: none"> <li>Members are selected based on their expertise, breadth of experience, and their ability to balance scientific rigour with practical considerations, regulatory requirements, and international perspectives.</li> <li>Members advise Health Canada on matters relating to Digital Health Technologies, which include but are not limited to the following: cyber security, artificial intelligence, software as a medical device, telemedicine, wireless medical devices, mobile medical apps, medical device data systems, and medical device interoperability.</li> </ul>	

### UNIVERSITY

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<b>Cyclical Program Review (Chemistry)</b> Internal Reviewer, <i>Carleton University</i>	Aug. 2021 Ottawa, ON, Canada
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### DEPARTMENT

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<b>Software Engineering Program Coordinator</b> <i>Department of Systems and Computer Engineering, Carleton University</i>	2021–2022 Ottawa, ON, Canada
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<b>Recruitment Coordinator</b> <i>Department of Systems and Computer Engineering, Carleton University</i>	2018–2022 Ottawa, ON, Canada
<b>Student Club Mentor</b> <i>Department of Systems and Computer Engineering, Carleton University</i>	2020–2021 Ottawa, ON, Canada
<b>Systems &amp; Computer Engineering Hiring Committee (Software Engineering)</b> <i>Member, Department of Systems and Computer Engineering, Carleton University</i>	2019 Ottawa, ON, Canada
<b>Systems &amp; Computer Engineering Hiring Committee (Technical Services Supervisor)</b> <i>Member, Department of Systems and Computer Engineering, Carleton University</i>	2019 Ottawa, ON, Canada
<b>Systems &amp; Computer Engineering Endowments Selection Committee</b> <i>Member, Department of Systems and Computer Engineering, Carleton University</i>	2018–2020 Ottawa, ON, Canada
<b>Ontario Graduate Scholarship (OGS) Selection Committee</b> <i>Member, Department of Systems and Computer Engineering, Carleton University</i>	2018–2020 Ottawa, ON, Canada
<b>Tenure &amp; Promotion Committee</b> <i>Department of Systems and Computer Engineering, Carleton University</i>	2018–2019 Ottawa, ON, Canada
<b>Systems &amp; Computer Engineering Hiring Committee (Cybersecurity)</b> <i>Member, Department of Systems and Computer Engineering, Carleton University</i>	2018 Ottawa, ON, Canada
<b>Domestic Student Recruitment Committee</b> <i>Member, Department of Systems and Computer Engineering, Carleton University</i>	2017 Ottawa, ON, Canada

## SCHOLARLY & PROFESSIONAL ACTIVITIES

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### EDITORIAL ACTIVITIES

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#### Guest Editor

- Special Issue on Software Design Trends Supporting Multi-Concern Assurance of *IEEE Software* 2021

### EVENT ADMINISTRATION

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#### Conference/Workshop Organizer

- Served as a co-organizer for the following conferences/workshop:
  - International Workshop on Multi-concern Assurance Practices in Software Design (MAPSOD) 2021
  - The Cybersecurity Revolution (SECREV) 2021

#### Track Chair

- Served as a track chair for a number of conferences:
  - International Conference on Ambient Systems, Networks and Technologies (ANT) 2019–2021  
Track: *System Software Engineering*
  - Winter Simulation Conference (WSC) 2019  
Track: *Simulation and Cybersecurity*

#### Program Committee Member

- Served on the program committee for a number of conferences and workshops including:
  - International Symposium on Foundations & Practice of Security (FPS) 2021
  - Annual Modeling and Simulation Conference (ANNSIM) 2021
  - Reconciling Data Analytics, Automation, Privacy, and Security Conference (RDAAPS) 2021
  - ACS/IEEE International Conference on Computer Systems and Applications (AICCSA) 2017–2020

- International Workshop on Interplay of Security, Safety and System/Software Architecture (ISSA) 2018
- International Conference on Ambient Systems, Networks and Technologies (ANT) 2014–2018
- International Conference on New Trends in Information Technology (NTIT) 2017
- Annual Cyber Security and Information Intelligence Research Workshop (CSIIIRW) 2012

## ASSESSMENT AND REVIEW ACTIVITIES

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### Journal Reviewer

- o Refereed a total of 18 journal article submissions for the following journals:
  - SAE International Journal of Connected and Automated Vehicles 2021
  - Journal of Data and Information Quality 2021
  - IEEE Transactions on Network and Service Management 2020
  - Concurrency and Computation: Practice and Experience 2020
  - Frontiers of Computer Science 2018 & 2019
  - Sensors 2017 & 2018
  - Knowledge and Information Systems 2018
  - Computational Intelligence 2017
  - Simulation Modelling Practice and Theory 2017
  - International Journal of Ad Hoc and Ubiquitous Computing 2017
  - Computer Standards & Interfaces 2017
  - Journal of Computer Security 2017
  - Security and Communication Networks 2012 & 2015
  - Applied Mathematics & Information Sciences 2015
  - Annals of Telecommunications 2013

### Conference Reviewer

- o Refereed a total of 64 submissions for a number of conferences including:
  - International Symposium on Foundations & Practice of Security (FPS) 2021
  - Resilience Week Symposium 2021
  - International Workshop on Multi-concern Assurance Practices in Software Design (MAPSOD) 2021
  - Annual Modeling and Simulation Conference (ANNSIM) 2021
  - Reconciling Data Analytics, Automation, Privacy, and Security Conference (RDAAPS) 2021
  - International Conference on Risks and Security of Internet and Systems (CRISIS) 2020
  - International Symposium on Software Reliability Engineering (ISSRE) 2019–2021
  - Winter Simulation Conference (WSC) 2019
  - IEEE Conference on Communications and Network Security (IEEE CNS) 2018–2019
  - ACS/IEEE International Conference on Computer Systems and Applications (AICCSA) 2017–2020
  - International Workshop on Interplay of Security, Safety and System/Software Architecture (ISSA) 2018
  - International Conference on Ambient Systems, Networks and Technologies (ANT) 2012–2018
  - International Conference on New Trends in Information Technology (NTIT) 2017
  - Cybersecurity and Cyberforensics Conference (CCC) 2016
  - International Symposium on Foundations of Health Information Engineering and Systems (FHIES) 2012
  - Annual Cyber Security and Information Intelligence Research Workshop (CSIIIRW) 2012
  - International Workshop on Discrete Event Systems (WODES) 2012
  - International Conference on Application and Theory of Petri Nets and Concurrency (Petri Nets) 2012

## Grant Reviewer

- Refereed a total of 3 grant proposals the following funding programs:
  - Mitacs Accelerate

2020–2021

## PUBLICATIONS

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Publication links can be found at: <https://carleton.ca/jaskolka/publications-by-type/>

Authors marked with an \* are Highly Qualified Personnel (HQP) under my supervision.

## REFEREED JOURNAL ARTICLES

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### PUBLISHED

- [1] Q. Rouland, B. Hamid, and **J. Jaskolka**, "Specification, detection, and treatment of STRIDE threats for software components: Modeling, formal methods, and tool support," *Journal of Systems Architecture*, vol. 117, p. 102073, Aug. 2021.
- [2] Q. Rouland, B. Hamid, and **J. Jaskolka**, "Formal specification and verification of reusable communication models for distributed systems architecture," *Future Generation Computer Systems*, vol. 108, pp. 178–197, July 2020.
- [3] M. Buyse\* and **J. Jaskolka**, "Communicating concurrent kleene algebra for distributed systems specification," *Archive of Formal Proofs*, p. 22, Aug. 2019. [http://isa-afp.org/entries/G2KA\\_DistributedSystems.html](http://isa-afp.org/entries/G2KA_DistributedSystems.html), Formal proof development.
- [4] **J. Jaskolka** and J. Villasenor, "An approach for identifying and analyzing implicit interactions in distributed systems," *IEEE Transactions on Reliability*, vol. 66, pp. 529–546, June 2017.
- [5] **J. Jaskolka** and R. Khedri, "Mitigating covert channels based on analysis of the potential for communication," *Theoretical Computer Science*, vol. 643, pp. 1–37, Aug. 2016.
- [6] **J. Jaskolka**, R. Khedri, and K. Sabri, "Investigative support for information confidentiality," *Journal of Ambient Intelligence and Humanized Computing*, vol. 6, pp. 425–451, Aug. 2015.
- [7] Q. Zhang, R. Khedri, and **J. Jaskolka**, "An aspect-oriented language for feature-modeling," *Journal of Ambient Intelligence and Humanized Computing*, vol. 5, pp. 343–356, June 2014.

## REFEREED CONFERENCE PROCEEDINGS

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### PUBLISHED

- [8] A. Jawad\* and **J. Jaskolka**, "Analyzing the impact of cyberattacks on industrial control systems using timed automata," in *Proceedings of the 21st IEEE International Conference on Software Quality, Reliability, and Security, QRS 2021*, (Hainan Island, China), p. 12, 2021. (*To Appear*).
- [9] J. Samuel\*, **J. Jaskolka**, and G.O.M. Yee, "Analyzing structural security posture to evaluate system design decisions," in *Proceedings of the 21st IEEE International Conference on Software Quality, Reliability, and Security, QRS 2021*, (Hainan Island, China), p. 12, 2021. (*To Appear*).
- [10] L. Newton\* and **J. Jaskolka**, "Analyzing implicit interactions to identify weak points in cyber-physical system designs," in *Proceedings of the Resilience Week 2021 Symposium*, (Salt Lake City, UT, USA), pp. 1–8, 2021.
- [11] **J. Jaskolka**, B. Hamid, A. Jawad\*, and J. Samuel\*, "A secure development decomposition argument pattern for structured assurance case models," in *The 28th Conference on Pattern Languages of Programs, PLoP 2021*, (Online), p. 10, 2021. (*To Appear*).

- [12] **J. Jaskolka**, B. Hamid, A. Jawad\*, and J. Samuel\*, “A security property decomposition argument pattern for structured assurance case models,” in *The 25th European Conference on Pattern Languages of Programs, EuroPLoP 2021*, (Kloster Irsee, Bavaria, Germany), p. 10, 2021. (*To Appear*).
- [13] A. Jawad\* and **J. Jaskolka**, “Modeling and simulation approaches for cybersecurity impact analysis: State-of-the-art,” in *Proceedings of the 2021 Annual Modeling and Simulation Conference, ANNSIM 2021*, (Fairfax, VA, USA), pp. 1–12, July 2021.
- [14] J. Samuel\*, **J. Jaskolka**, and G.O.M. Yee, “Leveraging external data sources to enhance secure system design,” in *Proceedings of the 2021 Conference on Reconciling Data Analytics, Automation, Privacy, and Security: A Big Data Challenge, RDAAPS 2021*, (Hamilton, ON, Canada), pp. 1–8, May 2021.
- [15] J. Samuel\*, K. Aalab\*, and **J. Jaskolka**, “Evaluating the soundness of security metrics from vulnerability scoring frameworks,” in *Proceedings of the 19th IEEE International Conference on Trust, Security and Privacy in Computing and Communications, IEEE TrustCom 2020*, (Guangzhou, China), pp. 442–449, Dec. 2020.
- [16] **J. Jaskolka**, “Identifying and analyzing implicit interactions in a wastewater dechlorination system,” in *Computer Security. CyberICPS 2020, SECPRE 2020, ADIoT 2020* (S. Katsikas et al., ed.), vol. 12501 of *Lecture Notes in Computer Science*, pp. 34–51, Springer, Cham, Dec. 2020.
- [17] Q. Rouland, B. Hamid, and **J. Jaskolka**, “Reusable formal models for threat specification, detection, and treatment,” in *Reuse in Emerging Software Engineering Practices, Proceedings of the 19th International Conference on Software and Systems Reuse (ICSR 2020)* (S. Ben Sassi, S. Ducasse, and H. Mili, eds.), vol. 12541 of *Lecture Notes in Computer Science*, (Hammamet, Tunisia), pp. 52–68, Springer International Publishing, Dec. 2020. (**Best Paper Award Winner**).
- [18] T. Sattolo\* and **J. Jaskolka**, “Evaluation of statistical tests for detecting storage-based covert channels,” in *35th International Conference on ICT Systems Security and Privacy Protection, IFIP SEC 2020* (M. Hölbl, K. Rannenberg, and T. Welzer, eds.), vol. 580 of *IFIP Advances in Information and Communication Technology*, (Maribor, Slovenia), pp. 17–31, Springer, Cham, Sep. 2020.
- [19] **J. Jaskolka**, “Recommendations for effective security assurance of software-dependent systems,” in *Intelligent Computing, SAI 2020* (K. Arai, S. Kapoor, and R. Bhatia, eds.), vol. 1230 of *Advances in Intelligent Systems and Computing*, pp. 511–531, Springer, Cham, July 2020.
- [20] B. Hamid, Q. Rouland, and **J. Jaskolka**, “Distributed maintenance of a spanning tree of  $k$ -connected graphs,” in *Proceedings of the 24th IEEE Pacific Rim International Symposium on Dependable Computing*, (Kyoto, Japan), pp. 217–226, Dec. 2019.
- [21] Q. Rouland, B. Hamid, and **J. Jaskolka**, “Formalizing reusable communication models for distributed systems architecture,” in *Proceedings of the 8th International Conference on Model and Data Engineering* (E. Abdelwahed, L. Bellatreche, M. Golfarelli, D. Méry, and C. Ordonez, eds.), vol. 11163 of *Lecture Notes in Computer Science*, (Marrakesh, Morocco), pp. 198–216, Oct. 2018.
- [22] **J. Jaskolka**, “Challenges in assuring security and resilience of advanced metering infrastructure,” in *Proceedings of the 18th annual IEEE Canada Electrical Power and Energy Conference, EPEC 2018*, (Toronto, ON, Canada), pp. 1–6, Oct. 2018.
- [23] **J. Jaskolka** and J. Villasenor, “Identifying implicit component interactions in distributed cyber-physical systems,” in *Proceedings of the 50th Hawaii International Conference on System Sciences, HICSS-50*, (Hilton Waikoloa Village, HI, USA), pp. 5988–5997, Jan. 2017.
- [24] **J. Jaskolka**, W. MacCaull, and R. Khedri, “Towards an ontology design architecture,” in *Proceedings of the 2015 International Conference on Computational Science and Computational Intelligence, CSCI 2015*, (Las Vegas, NV, USA), pp. 132–135, Dec. 2015.

- [25] **J. Jaskolka** and R. Khedri, "Towards the certification of covert channel freeness in cloud-based systems," in *Proceedings of the 6th International Conference on Ambient Systems, Networks and Technologies* (E. Shakshuki, ed.), vol. 52 of *Procedia Computer Science, ANT 2015 and SEIT 2015*, (London, UK), pp. 318–325, June 2015.
- [26] **J. Jaskolka** and R. Khedri, "A formulation of the potential for communication condition using C<sup>2</sup>KA," in *Proceedings of the 5th International Symposium on Games, Automata, Logics and Formal Verification* (A. Peron and C. Piazza, eds.), vol. 161 of *Electronic Proceedings in Theoretical Computer Science*, (Verona, Italy), pp. 161–174, Open Publishing Association, Sep. 2014.
- [27] **J. Jaskolka**, R. Khedri, and K. Sabri, "Investigative support for information confidentiality part II: Applications in cryptanalysis and digital forensics," in *Proceedings of the 9th International Conference on Future Networks and Communications* (E. Shakshuki, ed.), vol. 34 of *Procedia Computer Science, FNC 2014 and MobiSPC 2014*, (Niagara Falls, ON, Canada), pp. 266–275, Aug. 2014. (*Invited Paper*).
- [28] **J. Jaskolka**, R. Khedri, and K. Sabri, "Investigative support for information confidentiality part I: Detecting confidential information leakage via protocol-based covert channels," in *Proceedings of the 9th International Conference on Future Networks and Communications* (E. Shakshuki, ed.), vol. 34 of *Procedia Computer Science, FNC 2014 and MobiSPC 2014*, (Niagara Falls, ON, Canada), pp. 276–285, Aug. 2014. (*Invited Paper*).
- [29] **J. Jaskolka**, R. Khedri, and Q. Zhang, "Endowing concurrent Kleene algebra with communication actions," in *Proceedings of the 14th International Conference on Relational and Algebraic Methods in Computer Science* (P. Höfner, P. Jipsen, W. Kahl, and M. E. Müller, eds.), vol. 8428 of *Lecture Notes in Computer Science*, (Marienstatt, Germany), pp. 19–36, Springer International Publishing Switzerland, Apr. 2014.
- [30] Q. Zhang, R. Khedri, and **J. Jaskolka**, "Verification of aspectual composition in feature-modeling," in *Proceedings of the 10th International Conference on Software Engineering and Formal Methods* (G. Eleftherakis, M. Hinchey, and M. Holcombe, eds.), vol. 7504 of *Lecture Notes in Computer Science*, (Thessaloniki, Greece), pp. 109–125, Springer Berlin/Heidelberg, Oct. 2012.
- [31] **J. Jaskolka**, R. Khedri, and Q. Zhang, "On the necessary conditions for covert channel existence: A state-of-the-art survey," in *Proceedings of the 3rd International Conference on Ambient Systems, Networks and Technologies* (E. Shakshuki and M. Younas, eds.), vol. 10 of *Procedia Computer Science, ANT 2012 and MobiWIS 2012*, (Niagara Falls, ON, Canada), pp. 458–465, Aug. 2012.
- [32] Q. Zhang, R. Khedri, and **J. Jaskolka**, "An aspect-oriented language for product family specification," in *Proceedings of the 3rd International Conference on Ambient Systems, Networks and Technologies* (E. Shakshuki and M. Younas, eds.), vol. 10 of *Procedia Computer Science, ANT 2012 and MobiWIS 2012*, (Niagara Falls, ON, Canada), pp. 482–489, Aug. 2012.
- [33] **J. Jaskolka**, R. Khedri, and K. Sabri, "A formal test for detecting information leakage via covert channels," in *Proceedings of the 7th Annual Cyber Security and Information Intelligence Research Workshop, CSIRW-7*, (Oak Ridge, TN, USA), pp. 1–4, Oct. 2011.
- [34] **J. Jaskolka** and R. Khedri, "Exploring covert channels," in *Proceedings of the 44th Hawaii International Conference on System Sciences, HICSS-44*, (Koloa, Kauai, HI, USA), pp. 1–10, Jan. 2011.
- [35] K. Sabri, R. Khedri, and **J. Jaskolka**, "Verification of information flow in agent-based systems," in *Proceedings of the 4th International MCETECH Conference on e-Technologies* (G. Babin, P. Kropf, and M. Weiss, eds.), vol. 26 of *Lecture Notes in Business Information Processing*, (Ottawa, ON, Canada), pp. 252–266, Springer Berlin/Heidelberg, May 2009. (**Best Paper Award Nominee**).
- [36] K. Sabri, R. Khedri, and **J. Jaskolka**, "Specification of agent explicit knowledge in cryptographic protocols," in *Proceedings of the International Conference on Computer, Electrical, and Systems Science, and Engineering*, vol. 35 of *CESSE 2008*, (Venice, Italy), pp. 447–454, World Academy of Science, Engineering and Technology, Oct. 2008.



## CONTRIBUTIONS TO BOOKS

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- [37] M. Bialy, V. Pantelic, **J. Jaskolka**, A. Schaap, L. Patcas, M. Lawford, and A. Wassying, *Handbook of System Safety and Security: Cyber Risk and Risk Management, Cyber Security, Threat Analysis, Functional Safety, Software Systems, and Cyber Physical Systems*, ch. 3: Software Engineering for Model-Based Development by Domain Experts, pp. 39–64. Elsevier, first ed., Oct. 2016.
- [38] K. Sabri, R. Khedri, and **J. Jaskolka**, *Advanced Technologies*, ch. 13: Algebraic Model for Agent Explicit Knowledge in Multi-agent Systems, pp. 224–250. IN-TECH, Oct. 2009.

## NON-REFEREED TECHNICAL REPORTS

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- [39] **J. Jaskolka**, “Assurance cases for security and resilience of advanced metering infrastructure,” Technical Report, Prepared for Natural Resources Canada, Mar. 2018.
- [40] **J. Jaskolka** and J. Villasenor, “Securing cyber-dependent maritime systems and operations,” NMIO Technical Bulletin vol. 12, National Maritime Intelligence-Integration Office, June 2017.
- [41] M. Bialy, J. Carette, L. Gibson, **J. Jaskolka**, M. Lawford, B. Mackenzie, T. Maibaum, A. Mallya, G. Marks, V. Pantelic, A. Schaap, S. Shah, and A. Wassying, “Phase 1 Quarterly Report 8 on APC LEAP – Embedded Software Project,” Technical Report, McMaster Centre for Software Certification, Hamilton, ON, Canada, Dec. 2015.
- [42] **J. Jaskolka**, W. MacCaull, and R. Khedri, “Towards an architectural framework for systematically designing ontologies,” Tech. Rep. CAS-15-09-RK, McMaster University, Hamilton, ON, Canada, Nov. 2015.
- [43] **J. Jaskolka**, R. Khedri, and Q. Zhang, “Foundations of communicating concurrent Kleene algebra,” Tech. Rep. CAS-13-07-RK, McMaster University, Hamilton, ON, Canada, Nov. 2013.
- [44] Q. Zhang, R. Khedri, and **J. Jaskolka**, “An aspect-oriented language based on product family algebra: Aspects specification and verification,” Tech. Rep. CAS-11-08-RK, McMaster University, Hamilton, ON, Canada, Nov. 2011.
- [45] **J. Jaskolka**, R. Khedri, and K. Sabri, “Information leakage via protocol-based covert channels: Detection, automation, and applications,” Tech. Rep. CAS-11-05-RK, McMaster University, Hamilton, ON, Canada, Aug. 2011.
- [46] K. Sabri, R. Khedri, and **J. Jaskolka**, “Automated verification of information flow in agent-based systems,” Tech. Rep. CAS-09-01-RK, McMaster University, Hamilton, ON, Canada, Jan. 2009.

## OTHER PUBLISHED WORKS

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- [47] **J. Jaskolka**, “[Cyberattacks to critical infrastructure threaten our safety and well-being.](#)” The Conversation Canada, October 2021.

## PRESENTATIONS

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### INVITED PRESENTATIONS

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- [1] **J. Jaskolka**, “Data-driven vulnerability analysis in critical infrastructure systems.” Identity, Privacy and Security Initiative (IPSI) Seminar, University of Toronto, Nov. 9, 2021.
- [2] **J. Jaskolka**, “Leveraging external data sources to enhance secure system design.” IEEE Women in Engineering Ottawa Chapter Seminar, June 3, 2021.

- [3] **J. Jaskolka**, "Effective security assurance for critical infrastructure: Current challenges and future directions." The Cybersecurity Revolution (SECREV 2021), May 21, 2021.
- [4] **J. Jaskolka**, "Specification, detection, and treatment of STRIDE threats for software components." Real Time and Distributed Systems Research Centre (RADS) Seminar, Carleton University, May. 20, 2021.
- [5] **J. Jaskolka**, "Identifying and analyzing implicit interactions in critical infrastructure systems." Sustainable Cities and Society Seminar, Mississippi State University, Apr. 28, 2021.
- [6] **J. Jaskolka**, "Cyber security considerations for critical infrastructure digitalization." Natural Resources Canada Cyber Security, Smart Grids, and Innovation Workshop, Apr. 22, 2021.
- [7] **J. Jaskolka**, "Towards a cyber secure energy sector: Current challenges and future directions." Natural Resources Canada Cyber Security, Smart Grids, and Innovation Workshop, Dec. 3, 2020.
- [8] **J. Jaskolka**, "Data-driven approaches for cyber security evaluation and assurance." Data Science Distinguished Speaker Seminar Series, Carleton University, Oct. 22, 2020.
- [9] **J. Jaskolka**, "Implicit interactions analysis: A wastewater treatment system case study." CIRI Webinar Series, Oct. 21, 2020.
- [10] **J. Jaskolka**, "Staying secure in the era of smart things." Ingenious Talks Online (Webinar), May 13, 2020.
- [11] **J. Jaskolka**, "Security considerations for digital health technologies." IEEE Women in Engineering Ottawa Chapter Lunch-and-Learn Seminar, Nov. 2, 2019.
- [12] **J. Jaskolka**, "Supporting cyber security standards development with security assurance cases." SERENE-RISC 2019 Annual Workshop, Ottawa, ON, Canada, Oct. 23, 2019.
- [13] **J. Jaskolka**, "Cybersecurity evaluation and assurance for IoT-enabled systems." IEEE Women in Engineering Ottawa Chapter Seminar, Apr. 8, 2019.
- [14] **J. Jaskolka**, "Cybersecurity assurance for critical infrastructure." Université du Québec en Outaouais, Gatineau, QC, Canada, Feb. 8, 2018.
- [15] **J. Jaskolka**, "Security and privacy in a connected world." Ingenious Talks Series, Ottawa, ON, Canada, Feb. 7, 2018.
- [16] **J. Jaskolka**, "Identifying and analyzing implicit interactions in critical infrastructure." CIRI Webinar Series, Jan. 25, 2018.
- [17] **J. Jaskolka**, "Formal approaches for automated security evaluation." SERENE-RISC Fall 2017 Workshop, Ottawa, ON, Canada, Oct. 25, 2017.
- [18] **J. Jaskolka**, "Cybersecurity challenges and considerations for medical devices." IEEE Ottawa Chapter 125th EMBS Seminar Series, Ottawa, ON, Canada, Sep. 28, 2017.
- [19] **J. Jaskolka** and J. Villasenor, "Cybersecurity assurance for critical infrastructure." 18th Meeting of the Software Certification Consortium, Annapolis, MD, USA, May 11, 2017.
- [20] **J. Jaskolka** and J. Villasenor, "Identification and analysis of implicit component interactions in critical distributed systems." Centre for Power & Information (CPI) Seminar, University of Toronto, Toronto, ON, Canada, May 31, 2016.
- [21] **J. Jaskolka** and J. Villasenor, "Supply chain cybersecurity assurance for critical infrastructure." Workshop on Building a Community of Practice in Smart Grid Cyber Security, University of Toronto, Toronto, ON, Canada, May 26, 2016.

- [22] **J. Jaskolka** and J. Villasenor, "Identification and analysis of implicit component interactions in critical distributed systems." Critical Infrastructure Resilience Institute (CIRI) Seminar, University of Illinois at Urbana-Champaign, Urbana, IL, USA, May 24, 2016.
- [23] **J. Jaskolka**, R. Khedri, and K. Sabri, "Investigative support for information confidentiality part I: Detecting confidential information leakage via protocol-based covert channels." 9th International Conference on Future Networks and Communications, Niagara Falls, ON, Canada, Aug. 20, 2014.
- [24] **J. Jaskolka**, R. Khedri, and K. Sabri, "Investigative support for information confidentiality part II: Applications in cryptanalysis and digital forensics." 9th International Conference on Future Networks and Communications, Niagara Falls, ON, Canada, Aug. 20, 2014.

## CONFERENCE PRESENTATIONS

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- [25] **J. Jaskolka**, "Identifying and analyzing implicit interactions in a wastewater dechlorination system." 6th Workshop on the Security of Industrial Control Systems and of Cyber-Physical Systems, Sep. 17, 2020.
- [26] **J. Jaskolka**, "Recommendations for effective security assurance of software-dependent systems." Computing Conference 2020, July 16, 2020.
- [27] **J. Jaskolka**, "Challenges in assuring security and resilience of advanced metering infrastructure." 2018 IEEE Electrical Power and Energy Conference, Toronto, ON, Canada, Oct. 11, 2018.
- [28] **J. Jaskolka** and J. Villasenor, "Identifying implicit component interactions in distributed cyber-physical systems." 50th Hawaii International Conference on System Sciences, Waikoloa Village, HI, USA, Jan. 7, 2017.
- [29] **J. Jaskolka**, W. MacCaull, and R. Khedri, "Towards an ontology design architecture." 2015 International Conference on Computational Science and Computational Intelligence, Las Vegas, NV, USA, Dec. 9, 2015.
- [30] **J. Jaskolka** and R. Khedri, "Towards the certification of covert channel freeness in cloud-based systems." 6th International Conference on Ambient Systems, Networks and Technologies, London, UK, June 5, 2015.
- [31] **J. Jaskolka** and R. Khedri, "A formulation of the potential for communication condition using C<sup>2</sup>KA." 5th International Symposium on Games, Automata, Logics and Formal Verification, Verona, Italy, Sep. 11, 2014.
- [32] **J. Jaskolka**, R. Khedri, and Q. Zhang, "Endowing concurrent Kleene algebra with communication actions." 14th International Conference on Relational and Algebraic Methods in Computer Science, Marienstatt, Germany, Apr. 28, 2014.
- [33] **J. Jaskolka**, R. Khedri, and Q. Zhang, "On the necessary conditions for covert channel existence: A state-of-the-art survey." 3rd International Conference on Ambient Systems, Networks and Technologies, Niagara Falls, ON, Canada, Aug. 29, 2012.
- [34] **J. Jaskolka**, R. Khedri, and K. Sabri, "A formal test for detecting information leakage via covert channels." 7th Annual Cyber Security and Information Intelligence Research Workshop, Oak Ridge, TN, USA, Oct. 12, 2011.
- [35] **J. Jaskolka** and R. Khedri, "Exploring covert channels." 44th Hawaii International Conference on System Sciences, Koloa, Kauai, HI, USA, Jan. 5, 2011.

## POSTER PRESENTATIONS

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- [36] J. Samuel\*, **J. Jaskolka**, and G.O.M. Yee, "A data-driven approach for designing secure systems." Data Day 7.1, Ottawa, ON, Canada, Mar. 30 2021. (**Best Poster Award Winner**).
- [37] T. Sattolo\* and **J. Jaskolka**, "On the real-time detection of covert channels." SERENE-RISC 2019 Annual Workshop, Ottawa, ON, Canada, Oct. 23, 2019.

- [38] **J. Jaskolka** and J. Villasenor, "Identification of implicit component interactions in critical infrastructures." *Poster Presentation* at the Critical Infrastructure Resilience Institute (CIRI) Kick-Off Event, University of Illinois at Urbana-Champaign, Urbana, IL, USA, Apr. 12, 2016.

## OTHER PRESENTATIONS

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- [39] **J. Jaskolka**, "Data-driven approaches for cyber security evaluation and assurance." Carleton University Advancement Briefing, Mar. 31, 2021.
- [40] **J. Jaskolka**, "Cybersecurity assurance for critical infrastructure: Identifying and analyzing implicit interactions." Cybersecurity and Infrastructure Security Agency (CISA) ICS OpCom Briefing (Online), Sep. 4, 2020.
- [41] **J. Jaskolka**, "Securing cyber-dependent maritime systems and operations." United States Coast Guard Pacific Area Executive Leadership Team Meeting, Stanford, CA, USA, Mar. 14, 2018.
- [42] **J. Jaskolka** and J. Villasenor, "Identification and analysis of implicit component interactions in critical distributed systems." CISAC Cyber Reading Group Seminar, Stanford University, Stanford, CA, USA, Apr. 21, 2016.

## INTERVIEWS AND MEDIA RELATIONS

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### BROADCAST INTERVIEWS

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**Carleton University Partners with DND to Prevent e-Healthcare Cyberattacks** Aug. 13, 2019  
*CBC Radio: All in a Day*

### INTERVIEW CONTRIBUTIONS TO NEWS ARTICLES

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**'Insider attacks' that breached Ontario vaccination booking system the hardest to prevent, cybersecurity expert says** Nov. 24, 2021  
*Article by Blair Crawford, Ottawa Citizen*

**New CIRI Tool Helps Critical Infrastructure Operators Identify Risks From Implicit Interactions** Jun. 1, 2020  
*Article by Kim Gudeman, Critical Infrastructure Resilience Institute*

**We dodged the Y2K computer apocalypse 20 years ago. What's next could be worse** Dec. 31, 2019  
*Article by Joanne Laucius, Ottawa Citizen*

**The growth of IoMT and what it means for MSPs** Dec. 4, 2019  
*Article by Kevin Williams, SmarterMSP*

**CIRI researcher seeking testbed for cybersecurity assurance framework** Jan. 17, 2019  
*Article by Ashley Albrecht, Critical Infrastructure Resilience Institute*

## PROFESSIONAL MEMBERSHIPS

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**Professional Engineers Ontario (PEO)** Apr. 2019–Present  
*Professional Engineer*

**Smart Cybersecurity Network (SERENE-RISC)** Dec. 2017–Present  
*Academic Member*

**Association for Computing Machinery (ACM)** Feb. 2015–Present  
*Professional Member*

**Institute of Electrical and Electronics Engineers (IEEE)**  
*Member*

Feb. 2015–Present

**Golden Key International Honour Society**  
*Member*

Oct. 2008–Present