CyberSEA Research Lab
Carleton University
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🐦 @CyberSEA_Lab

Canada's Capital University
Systems and Computer Engineering
Carleton University
1125 Colonel By Drive
Ottawa, ON K1S 5B6

November 3, 2019

Position Available: Ph.D. Candidate
System-Level Threat Modeling for MiGen Transactive Grid

The Cyber Security Evaluation and Assurance (CyberSEA) Research Lab at Carleton University is actively looking for a graduate student at the Doctoral level to work on a funded research project entitled *System-Level Threat Modeling for MiGen Transactive Grid* starting in September 2020.

Project Description

The objective of the MiGen Transactive Grid Project is to create a Net-Zero Carbon Community strategy for buildings and private homes overlaid with a market-driven Transactive Demand Response solution. Operating in a Transactive Energy Market, the solution will optimize energy sources and loads in real-time creating an overall smart energy network that reduces greenhouse gas emissions and increases grid resiliency and flexibility.

This project will give special attention to enhancing security in the MiGen Transactive Grid system. We target the adoption of a system-level approach to security which considers connected devices and systems as entities interacting together, with people and with the environment. We aim to develop a system-level security threat model that can help to identify vulnerabilities and be used to develop suitable security mechanisms and protocols. Based on this model, we seek to build an adaptive system-level security platform that is capable of guaranteeing high levels of system security, privacy, and trust. The platform will be flexible and will continuously adapt to environment changes, leading to consistent and early assessment and mitigation of cybersecurity threats, ultimately reducing potential risk.

Duties and Responsibilities

Dissertation: As part of the Doctoral Program requirements, candidates will complete a disseration on a topic aligned with the research mission of the CyberSEA Research Lab including but not limited to: cybersecurity evaluation and assurance, threat modeling, risk assessment and management, modelling and simulation for security, software engineering, distributed systems, and/or formal methods. The thesis topic may or may not be directly related to the applied project work from the Research Assistantship. Candidates will be expected to spend approximately 70% of their time dedicated to their disseration work.

Research Assistantship: The funding for this position will be provided from applied research System-Level Threat Modeling for MiGen Transactive Grid project led by Hydro Ottawa Limited. The project is sponsored through the Smart Grid Program offered by Natural Resources Canada. Candidates will be expected to spend approximately 30% of their time dedicated to carrying out the work required for the successful completion of the project.

Desired Skills/Qualifications

Suitable candidates will have a Master's degree in Software Engineering, Computer Science, or a related field. Ideal candidates will be self-motivated with an ability to work independently and to communicate effectively in a team environment. A background in computer security, security engineering concepts, and systems engineering concepts is highly desirable.

All candidates must satisfy the Minimum Admission Requirements for Doctoral Programs at Carleton University.

Further Information

For more information about Graduate Studies at Carleton University and the Department of Systems and Computer Engineering, please visit: https://carleton.ca/sce/graduate-studies/. For more information about applying for Graduate Studies at Carleton University, please visit: https://graduate.carleton.ca/apply-online/. For more information about funding for Graduate Studies, please visit: https://graduate.carleton.ca/financial-assistance/admissions-funding/.

About the CyberSEA Research Lab

The Cyber Security Evaluation and Assurance (CyberSEA) Research Lab conducts advanced academic research to develop systematic and rigorous approaches for evaluating and assuring the cyber security of software-dependent systems.

For more information, please visit: https://carleton.ca/cybersea/

How to Apply

Interested applicants are to send a **CV** and **Statement of Interest** detailing your research interests, background, and experience by email to the CyberSEA Lab Director:

Jason Jaskolka, Ph.D., P.Eng.

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For more information about how to apply, please visit: https://carleton.ca/cybersea/positions-available/