Christopher Molloy (He/Him/His)

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Education

Queen's University — Kingston, ON
Ph.D. Computing — expected 2024
Relevant Coursework: Data Mining, Deep Learning, Introduction to Cybersecurity, Cryptography

Queen's University — Kingston, ON
Bachelor's of Computing in Mathematics — April 2020
Dean's Honor list 2019-2020

Research Experience

Queen's University — Kingston, ON
PhD Researcher — September 2020 – present

- Designed neural network for clone search on zero-day malware
- Created first two-player game for adversarial malware generation and detection
- Engineered neural network for aviation traffic anomaly detection

Queen's University — Kingston, ON
Undergraduate Researcher — January 2020 – April 2020

- Implemented image signature method from publication
- Matched malware families based on image signature
- Implemented image signature method into large scale clone search system

Employment Experience

Lunenfeld-Tanenbaum Research Institute — Toronto, ON
Summer Engineer — April 2019 – August 2019

- Designed php enabled website to store genome tube information
- Created friendly user experience for lab technicians to store tube data in database without aid from engineer

Vouchr — Toronto, ON
Summer Engineer — April 2018 – August 2018

J.F. Brennan Custom Homes — Toronto, ON
Laborer — April 2017 – August 2017

Leadership Experience

Queen's University — Kingston, ON
Undergraduate Thesis Team Lead — January 2020 – April 2020

- Introduced team to cybersecurity and cyber threat response topics
- Aided in interpreting clustering results for malware grouping
- Met weekly to discuss and help with project progress

Skills

Computer: Python (6 years), Git (6 years), Java (3 years), R (3 years), MySQL (3 years), C++ (2 years), C (2 years), HTML/CSS/JavaScript (8 years)

Publications

C. Molloy, S.H.H. Ding, B. C. M. Fung and P. Charland, "H4rm0ny: A Competitive Zero-Sum Two-Player Markov Game for Multi-Agent Learning on Evasive Malware Generation and Detection," *2022 IEEE International Conference on Cyber Security and Resilience (CSR)*, 2022 **[In Print]**

C. Molloy, P. Charland, B. C. M. Fung and S.H.H. Ding, " JARV1S: Phenotype Clone Search for Rapid Zero-Day Malware Triage and Functional Decomposition for Cyber Threat Intelligence " *2022 14th International Conference on Cyber Conflict (CyCon),* 2022.

C. Molloy, S.H.H. Ding, Z. Mansour. (2022). Adversarial Learning on Malware. In: Phung, D., Webb, G.I., Sammut, C. (eds) Encyclopedia of Machine Learning and Data Science. Springer, New York, NY.

Z. Mansour, C. Molloy, S.H.H. Ding. (2022). Machine Learning for Static Malware Analysis. In: Phung, D., Webb, G.I., Sammut, C. (eds) Encyclopedia of Machine Learning and Data Science. Springer, New York, NY.