Mike Clark

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Relevant Experience

Teaching Assistantship Jan - Jul 2016

University of Calgary

CPSC 457: Principles of Operating Systems (Spring)

CPSC 525: Principles of Information Security (Winter)

- Developed and presented *original* tutorial content and exercises for ~50 students
- Received excellent student rating of instruction: 64/70 and 65/70, respectively
- Graded coursework, proctored and marked examinations

Research Assistant Sep - Dec 2015

University of Calgary

- Investigated new memory supervision architectures and existing solutions
- Prototyped device to constrain memory access to R/W patterns encoded as regular expressions and implemented using C in a Linux environment

Application Developer May 2012 - Sep 2015

University of Calgary

- Redeveloped legacy software used to manage and enforce dynamic application and network policy during computer-aided assessments
- Wrote custom kernel driver and Windows services to enforce policy on endpoints
- Designed and implemented a HA-cluster providing back-end support
- Worked independently as the sole developer, with minimal supervision
- Coordinated with multiple stakeholders during development and deployment
- Used by ~2000 students per semester with virtually no unscheduled downtime

Projects

Non-deterministic Control-flow Obfuscation 2018

- Traditional thesis for Master of Science program *(defense upcoming)*
- Created obfuscation technique that is resistant to static and dynamic analysis
- Developed three distinct frameworks to generate and experiment on programs under different realizations of the obfuscation
- Developed an LLVM optimization pass in C++ to automate code transformations
- Core components implemented in C, but made extensive use of shell scripts and Python throughout the project and analysis tools

Graphical Password and Study Framework 2017

- Developed a graphical password system which mitigates direct observation attacks
- Implemented an extensible framework (JS) to conduct autonomous usability studies for this, and other arbitrary challenge-response systems

Tabs2txt 2017

- Simple browser extension (JS) that copies tab URLs to a scratch pad
- Published to FF and Chrome Web Store (358 combined users)

Retrogame Archeology Term Project 2016

- Developed a large game for the VIC-20 console (circa 1980) in 6502 ASM
- Wrote highly-optimized code to accommodate extreme resource and ISA constraints
- Adopted for demonstration in future classes and department events

Email.Tracker 2015

- FF add-on to passively track the dissemination of your email address
- Manages and encodes tracking identifiers into existing email addresses by exploiting a differential between how online-services parse email addresses and the RFC spec

Undergraduate Honours Thesis 2014

- Runtime Support for Data Transformation Directives in x86 ELF Binaries
- Implemented as an Awk extension (C), allowing for the manipulation of data structures in a live process – received an *A*

Security Audit: Piazza 2013

- Audited popular 3rd party learning management system for course assignment
- Discovered: Session-key mismanagement, unauthorized access to private messages between instructors and other students, as well as other minor security issues

Skills

- Excellent written and oral communication abilities
- Strong social and interpersonal skills
- Adept at integrating disparate elements to solve a problem
- Deep understanding of operating system principles
- Practical experience with networking protocols
- Knowledge of common vulnerabilities and defenses
- Experienced in security auditing practices and reverse engineering methods
- Very good understanding of Intel and SYSV ABI
- Most proficient with C, Python, and x86/64 ASM
- Demonstrated ability to quickly learn new languages
- Extremely comfortable using and administering Linux systems

Education

Master of Science

Information Security | Computer Science

University of Calgary

Jan 2016 - Oct 2018 *(expected)*

GPA: 3.75 / 4.00

Bachelor of Science Honours (First Class)

Information Security | Computer Science

University of Calgary

Sep 2010 - Apr 2014

GPA: 3.50 / 4.00 (3.79 Major)

Awards

Graduate

- Alexander Graham Bell Canada Graduate Scholarship (NSERC)
- Alberta Graduate Student Scholarship
- Lockhart Family Graduate Scholarship
- Queen Elizabeth II Graduate Scholarship
- Department Research Award

Undergraduate

- Canadian Information Processing Society Scholarship
- Louise McKinney Scholarship
- Faculty of Science Dean's List (4.00/4.00)
- Jason Lang Scholarship
- Faculty of Science Dean's List (3.76/4.00)

Volunteer

Computer Science Graduate Society

- Chief Returning Officer (2016 - 2017)

Technovation Global Challenge

- Technical support (2017)
- Instructor and Mentor (2014)

Computer Science Undergrad. Society

- President (2012-2014)
- Executive (2010-2012)

Ladies Learning Code

- Workshop Mentor (2012 - 2014)