JOEL KATTICARAN

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RESEARCH

RESEARCHER: Computer Security, Grinnell College (Jun - Aug 2017)
Worked on a C/C++ library that seals Return Oriented Programming vulnerabilities in a program. My unique approach was to do a reachability analysis on the source code (at both compilation time and runtime) and determine if the jump/return instructions were to 'valid' addresses.

RESEARCH ASSISTANT: Low-level Energy Profiling, Grinnell College (May - Nov 2016)
Researched methods on energy profiling programs at a functional level. Apart from being an analysis tool, the product of the research - ALPACA Energy Profiler - enables the user to cut costs on long running programs, such as those found in servers. Power consumption using ALPACA was measured with an accuracy of up to 95%.

My research was awarded the fourth place at the ACM Student Research Competition, held as part of the *ACM SIGPLAN* conference in Amsterdam (Nov 2016).

MANAGEMENT/ TEACHING

PRESIDENT, DEBATING UNION: Grinnell College, (Aug 2017 - Jun 2018)
I served as the president of the Debating Union in Grinnell College, IA. Apart from overseeing the daily activities of the union, my duties involved managing a budget of $15,000 and ensuring that the union was well equipped to participate and succeed in the American Parliamentary debate circuit.

LEARNING FELLOW: Software Design, Dartmouth College (Jan - Mar 2017)
Worked as a learning fellow under Prof. David Kotz to organize and teach the curriculum of the Software Design class at Dartmouth College. Over the course of the semester I helped students solidify their understanding of the class material while also introducing them to new ideas and concepts related to the course.

EDUCATION

BACHELOR OF ENGINEERING: Dartmouth College, Thayer School of Engineering, (Hanover, NH), (2016 – Present)
Course of Study: Bachelor of Engineering with a focus on Computer Engineering.
Most Relevant Courses: Software Design and Implementation, Operating Systems
Cumulative GPA: 3.69

BACHELOR OF ARTS, COMPUTER SCIENCE: Grinnell College (Grinnell, IA), (2014-2018)
Most Relevant Courses: Object Oriented Design, Theory of Computation, Artificial Intelligence
Course of Study: Computer Science

INTERNATIONAL BACCALAUREATE: The Mahindra United World College of India, (Pune, India) (2012 - 2014)

PROJECTS

FLIP SCAN: (2017)

Created a device that allows the user the convenience of a portable scanner, while also serving the functionality of a three-pin binder. The device is currently awaiting a patent.

SECURITY EXPLOITS: (2017 - Present)

Secured funding from Grinnell College and conducted research that explores the effectiveness of common countermeasures against buffer overflows.

WEB CRAWLER: (2016 - Present)

Working independently on a web crawler with the aim of adding functionality to bypass some common countermeasures against web crawlers.

MULTIPLAYER SNAKE: (2016)

Extended the popular game, Snake, to include multiplayer functionality and other features. Resulted in department-wide games of competitive snake during finals week!

SKILLS

PROGRAMMING LANGUAGES: Expert in C, Java and Bash; Competent in Python, C++ and Scheme

PARADIGMS AND TOOLS: Functional, Imperative, Object Oriented | Kali Linux Tools(Metasploit Framework, nmap, Sqlmap), Git, Unix, Linux, LLVM

LANGUAGES: English (Fluent), Malayalam (Fluent), Hindi (Professional Fluency)

INTERESTS

DEBATE: As president of the Grinnell Debating Union, I enjoy building and executing arguments and public speaking. Some of my favorite topics to debate include the effects of artificial intelligence on today's society and the impact of divestment from fossil fuels.

COMPUTER SECURITY: I am interested in all aspects of computer security. I actively seek out common system exploits and countermeasures. Active member of many wargames and hacking challenges.

DEVELOPMENT THROUGH CLEAN ENERGY: I seek out innovative ways in which clean energy can be used to empower rural communities. My interest in this area led me to work at Grameen Shakti, Bangladesh and Barefoot College, Rajasthan, India. In both these projects, I assessed the impact of the solar lamp on the lifestyles of farmers in the area.

BACKPACKING: One of the perks of being brought up near the Western Ghats of India was availability of endless rugged trails. I enjoy venturing out into the wild. My most exciting such adventure was a month-long expedition to the Himalayas.