Cameron Oakley

Computer Science Undergraduate Student,
CSU Monterey Bay

Cell: (831) 444-5307
Email: Oakley.CameronJ@gmail.com
Website: camsterrrr.github.io
GitHub: www.github.com/camsterrrr
LinkedIn: www.linkedin.com/in/cameron-oakley

Research Interests

My research interests focus on computer networks and cybersecurity, with a specific focus on engineering secure systems. During my undergraduate research, I worked on developing mitigation strategies for black hole attacks in Mobile Adhoc Networks (MANETs), specifically aiming to make the open-source BATMAN routing protocol more secure.

Education

CSU Monterey Bay, Marina CA — Aug 2022 - (Est.) May 2024
Bachelors of Science Computer Science, Networks and Security — GPA: 4.0/4.0

- Relevant coursework: Algorithm Design & Analysis, Data Science & Machine Learning, Computer Networks, Internet Programming, Network Administration, Network Security, Operating Systems, Software Design & Engineering.
- In-progress coursework: Capstone Project, Computer Science Service Learning.
- Proposed courses: Independent study for redesigning Computer Networks labs & projects.

Hartnell Community College, Salinas CA — Jul 2019 - May 2022
Associates of Science Computer Science — GPA: 3.937/4.0

- Relevant coursework: Calculus I & II, Data Structures & Algorithms, Discrete Structures, Foundational Programming, Object-Oriented Programming.

Research Experience

CSU Monterey Bay, Researcher — 2023 - Present
Mitigating Black Hole Attacks in MANETs, advised by Dr. Sam Ogden

- This research project focuses on exploring innovative mitigation strategies against black hole attacks within the MANET architecture, with a particular emphasis on mitigation strategies for the open-source BATMAN routing protocol.
- In this project, I achieved several milestones, including a thorough literature review where I learned of vulnerabilities of existing MANET architectures to black hole attacks. Additionally, I set up a build tool, OpenWRT, for compiling the BATMAN routing protocol source code in the Linux kernel and configuring a development environment for the protocol.

Presentations

Exploring Mitigation Strategies for Common MANET Network Layer Attacks

- Monterey Bay Drone Automation and Robotics Technology Symposium (Poster) — Oct 2023
- *CSU Monterey Bay UROC Summer Showcase* (Poster) — Aug 2023
- *CSU Monterey Bay UROC Spring Showcase* (Poster) — May 2023

Employment

Monterey County Sheriff's Office, Salinas CA

- ***Senior IT Analyst*** — Nov 2021 - Present
  - Provided IT support as a member of the help desk, effectively addressing a wide range of user issues, including password resets, system troubleshooting, and the resolution of technical challenges.
  - Contributed to the recreation of MCSO's website, acquiring proficiency in WordPress, HTML, CSS, JavaScript, FTP tools, and Batch scripting.
  - Enhanced data processing efficiency by writing Python scripts to parse and edit CSV data, leveraging the Pandas library.
  - Strengthened server security by patching systems based on vulnerability scans, involving the analysis of CVEs and documentation for patch application.
  - Optimized the synchronization of an offline camera network by strategically determining the locations for installing NTP servers. This included documenting 250 cameras, their locations, and communication details with distribution rooms.

- Applied computer hardware expertise to identify and address performance bottlenecks in workstations across the department. Successfully mitigated issues related to excessively long load times when opening forensic extractions.
- Elevated organizational security by auditing and improving the process of extracting and uploading video evidence. Discovered and addressed a significant security concern in an offline network with an internet connection. Streamlined building access procedures for employees.

- ***Student Intern*** May 2020 - Nov 2021
- ***Temporary Employee*** Oct 2019 - May 2020

Monterey County Office of Emergency Services, Salinas CA

- ***Documentation Branch Leader*** Mar 2020 - Jun 2020
  - Collaborated within a team, coordinating volunteer efforts across various County departments during the start of the COVID-19 pandemic, ensuring a coordinated and effective response.

Affiliations

UC Davis Envision Nov 2023

- Envision aims to remove obstacles hindering underrepresented students from entering and completing graduate school. The program consists of individuals with perspectives or experiences belonging to groups historically underrepresented in higher education.
- *Envision Team, Envision@ucdavis.edu*

Louis and Stokes Alliance for Minority Participation Jan 2023 - Sep 2023

- Initiative designed to provide assistance to underrepresented students and individuals encountering obstacles in achieving success in STEM fields.
- *Jessica Bautista, Campus Co-Coordinator for CSUMB-LSAMP, JBautista@csumb.edu*

California State University Monterey Bay UROC Researcher Jan 2023 - Sep. 2023

- UROC involves students from various majors in mentored undergraduate research, fostering educational ownership, intellectual vibrancy, and scholarly identity through rigorous scholarly activities.
- *Jessica Bautista, Research Associate for CSUMB UROC, JBautista@csumb.edu*

MESA (Mathematics, Engineering, Science Achievement) Nov 2021 - May 2022

- MESA is a club I was a member of when I attended Hartnell College. The club aims to provide academic development to educationally disadvantaged community college students so they can excel academically.

Leadership

Student Mentor for Otter Collective Aug 2023 - Present

- The Otter Collective program enhances the student experience by providing mentor experience. Student mentors are ready to listen, inspire, help navigate challenges, and recognize opportunities.
- Served as a Student Mentor, providing guidance and support to five first-year and transfer computer science students, fostering their successful integration into the academic environment.

Vice President of the Network Security Team Sep 2022 - Present

- Played a role in the student-led club at CSU Monterey Bay, contributing as a seasoned competitor by teaching new club members the fundamentals of penetration testing and explaining conceptual topics, thereby enhancing their skills and understanding.
- Advocated for the club as the Student Council Representative, presenting budget proposals to secure financial support for club events and activities.

Awards & Honors

Codepath Cybersecurity Course Completer Dec 2023

- Acquired skills in blue team security analysis by learning and applying a suite of industry-standard tools and methodologies, including Burp, NMAP, Wazuh, Snort, Splunk, and Wireshark, for detecting, analyzing, and responding to security threats.

Graduated Summa Cum Laude from Hartnell Community College May 2022

Dean's List at Hartnell College & CSU Monterey Bay 2019 - Present

Projects

Gradebook Application, Full-Stack Development

- Designed relational database with entities for courses, enrollments, and assignments using MySQL.
- Developed a scalable back-end RESTful API using the SpringBoot server framework, implementing Java CRUD repositories for efficient database record management, utilizing RabbitMQ for seamless service-to-service communications, and conducting comprehensive testing with JUnit for unit testing, PostMan for API testing, and Selenium for end-to-end testing.
  - GitHub link: https://github.com/c-oakley/CST438-Gradebook-backend-COakley
- Created a dynamic front-end web app using Node.js and React, utilizing HTML, CSS, and JavaScript to render a user-friendly interface and Node.js to query the backend server for dynamic data.
  - GitHub link:https://github.com/c-oakley/CST438-Gradebook-frontend-COakley

Earthquake Data, Web Interface

- Developed an Express.js web app that accepts multiple routes and handles parameters from various HTML form elements using Node.js and the MVC design pattern.
- Implemented the Controller to query an Earthquake API using the node-fetch package.
- Processed returned information through Embedded.js and seamlessly transmitted data to the browser.
- Achieved visually appealing HTML pages by leveraging Bootstrap and various CSS properties.
- GitHub link: : https://github.com/camsterrrr/EarthquakeApp

CSafe, Password Manager

- Developing a password manager using C, demonstrating proficiency by implementing object-like classes, utilizing the Criterion unit test framework and the OpenSSL hash and encryption functions, and establishing a Makefile to build both unit tests and the main application.
  - GitHub link: https://github.com/camsterrrr/CSafe
- Developing a frontend desktop application using .NET Core and C#, enhancing user experience and accessibility.
  - GitHub link: https://github.com/camsterrrr/CSafe.NET

Network Infrastructure and Lab Experience

- Built a networking lab for practical experience in network design, utilizing various Cisco networking hardware to construct a private network and demonstrating proficiency in configuring network hardware, VLANs, routes, local logins, and management addresses.
  - GitHub link: https://github.com/camsterrrr/HomeNetworkLab
- Established dedicated game servers on Linux Ubuntu, utilizing Docker containers for deployment, implementing UFW and DFG port forwarding rules, and setting up regular backups using systemctl and cron events.
  - GitHub link: https://github.com/camsterrrr/MinecraftBedrock-Docker
- Secured Windows RDP connections by establishing an OpenVPN server, measured by configuring Linux server software, creating port forward rules, and scripting logging of successful RDP connections.

Predicting Damage Extent from Car Crash Data

- Accomplished the development of a Python notebook for car crash data analysis and damage prediction, measured by the effective utilization of various machine learning algorithms, including the K-Nearest Neighbor (KNN) classifier and KNN classification tree.
- Implemented optimization of hyperparameters, leveraging Python3 libraries such as NumPy, Pandas, and Scikit-Learn to achieve higher prediction accuracy.
- GitHub link: https://github.com/camsterrrr/Predicting_Damage_Extent

Reverse Engineering Malware

- Actively learning principles to reverse engineer malware, which includes learning methodologies for both static and dynamic analysis and establishing a secure environment for executing malware.

Windows Keylogger

- Developed a Windows keylogger that set a system hook, intercepted system messages bound for the OS, and logged each keystroke.
- Please email me for a link to the GitHub repository.

Hackathons

National Cyber League & CyberSEED

- Analyzed packet captures using Wireshark, showcasing proficiency in network traffic analysis.
- Examined log files with grep and awk utilities, providing insights into system activity and potential security issues.
- Conducted reverse engineering of programs and binaries using Ghidra disassembler and GDB debugger, showcasing expertise in identifying vulnerabilities and understanding software internals.

UC Santa Cruz ForAllSecure

- Applied fuzzing techniques and DevSecOps principles to identify and address software vulnerabilities in open-source projects.
- Utilized Docker and GitHub Actions to efficiently integrate security practices into the development pipeline.
- Deployed Mayhem to conduct comprehensive testing of applications, identifying defects to enhance overall software security.

Technical Skills

- Languages: BASH, C, C++, Java, JavaScript, CSS, HTML, Python, SQL
- General Tools: Docker, FileZilla/WinSCP, Git, Google Colab, Gradle, Maven, Make, Splunk, VirtualBox
- Security Tools: Burp, Catalyst, Kali Linux, NMAP, MISP, Wazuh, Snort, Splunk, Wireshark
- OSs: Windows, Linux (Ubuntu, Kali, Arch)