Marius Shepherd

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Education

University of British Columbia Sept 2022 - April 2027
Bachelor of Science, Combined Major in Computer Science and Mathematics *Vancouver, BC*

- Dean's Honour List | GPA: 3.90/4.00 | UBC Subbots | UBC CTF Team

Technical Skills

Programming Languages: C, C++, Java, Python, Swift, Julia, Typescript, ARMv8
Tools: Git, GitHub, Azure, Docker, Nessus, nmap, Metasploit, Wireshark, Sysdig, Burpsuite, Kali Linux
Libraries/Frameworks: MLFLow, PyTorch, OpenCV, Keras, ROS2, React, Bluetooth, Numpy, Pandas, Matplotlib
Certifications/Courses: Security+ (In Progress), CompTIA CySA+ (In Progress), HTB Academy

Work Experience

Security Research and Development Intern May 2025 - Sept 2025
NTT R&D *Tokyo, Japan*

- Member of the Network Innovation Center project, researching and developing machine learning and based IDS leveraging Linux system calls for NTT subsidiary cloud infrastructure
- Individually engineered two intrusion detection systems, capable of detecting 14 out of 15 simulated attacks ranging such as ShellShock, DirtyCow, HeartBleed, presenting at a conference to over 50 researchers
- Streamlined training and testing of LSTM, autoencoder models utilizing Python multi-processing, and optimized n-gram size, shared memory, IPC to limit overhead, and integrated MLFlow, Keras, OpenCV, Tensorflow
- Achieved 100% detection rate in 11 scenarios, and under 10% false alarm, improving a maximum of 140% by utilizing system call n-grams and argument values in kl-divergence, length and tokenization
- Leveraged shell scripts, Docker, Metasploit, sqlmap, exploitdb, Sysdig to create an efficient penetration testing environment for 10 different proposed intrusion detection systems

Cybersecurity Intern Jan 2024 - August 2024
Cyberium Group *Vancouver, BC*

- Developed a security training application for a high-profile client with over 1000 employees, gamifying security principles such as secure coding practices (OWASP), infrastructure hardening, and social engineering attacks
- Conducted analysis of clients' ISO 27001 evidence such as network diagrams, client incident handling processes, documentation, certifying high valued clients for ISO 27001 certification
- Assisted high-stake blue team operations including nmap port scans and vulnerability assessments with Nessus, CIS benchmark scans for endpoint hardening
- Led the creation of a React-Flask full-stack application for security compliance analysis, facilitating ISO 27001 and SOC 2 audit processes to be used by auditors

Undergraduate Teaching Assistant Jan 2023 – August 2025
University of British Columbia *Vancouver, BC*

- Programmed assessments relating to CPU pipelining optimizations, virtual memory and physical memory, C programming, filesystems (ext), and assembly translation, distributed to over 400 students through PrairieLearn
- Engineered extensive autograder test suites for student code that assess memory bugs, multi-threading, and assembly translation in C, with a emphasis on speed and reduced server load

Projects and Extracurriculars

Firmware Developer Sept 2024 – Current
UBC Subbots *Vancouver, BC*

- Led the embedded software team reaching, semi-finals and achieving best performance in team history with limited funding in RoboSub 2025
- Generated 100% autonomous gate & buoy navigation program with ROS2/C++, leveraging a combination of PID controller, gate detection CV, waypoint generation, and thruster allocation
- Engineered state estimation by leveraging Kalman filters, and creating a Ubuntu ROS2 driver for BNO085 optimizing configuration parameters for stable and accurate underwater state estimation