

# LUCAS BALL

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## Education

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**Oregon State University** **2022 – Present**  
*M.Sc. in Computer Science* *Corvallis, OR*

**Oregon State University** **2017 – 2022**  
*Bachelor of Science in Computer Science* *Corvallis, OR*

## Experience

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**Oregon State University / ORTSOC** **September 2023 - Present**  
*Graduate Teaching Assistant / Mentor* *Corvallis, OR*

- Helped students build their skills in security operations by mentoring them through various security scenarios
- Aided the students in monitoring and securing multiple legitimate clients
- Used DevOps practices to build security infrastructure for the security operations center including in-house production, testing, and development environments

**Oregon State University / Nuclear Regulatory Committee** **April 2023 - June 2023**  
*Graduate Research Assistant* *Corvallis, OR*

- Created models for understanding nuclear reactor security
- Analyzed and built threat models of specific nuclear reactors.
- Utilized export restricted software to generate threat models and attack simulations

**Oregon State University** **September 2022 - March 2023**  
*Graduate Teaching Assistant* *Corvallis, OR*

- (Operating Systems) Resolved problems with student code using debugging software
- (Cyber Attacks and Defense) Taught students best practices for binary exploitation
- (Cyber Attacks and Defense) Created challenges for students to practice binary exploitation skills

**Oregon State University / OPEnS Lab** **November 2020 - January 2022**  
*Project Lead / Programmer* *Corvallis, OR*

- Utilized Arduino project boards to create environmental sensing devices
- Used GitHub to organize project management and collaborate to solve software problems on research projects
- Collaborated with project team to solve Hardware/software development problems resulting in the deployment of multiple environmental research projects
- Programmed Ethernet, Cellular, and WiFi network configurations alongside HTTP/SSL communication.
- Configured long distance hardware communications such as LoRa, nRF and freewave radio

**Orengo Systems Inc.** **June - September 2017, 2018, 2019**  
*Electrical Engineering Intern* *Sutherlin, OR*

- Designed and printed circuit boards using Altium PCB design software
- Successfully developed and implemented a device to test circuit boards for quality control and manufacturing defects
- Designed digital logic programs for custom products

**Orengo Systems Inc.** **June - September 2015, 2016**  
*Information Technology Intern* *Sutherlin, OR*

- Used integrated software to conduct data entry for products in order for the IT team to track devices
- Tested in-production web pages for quality control and software bugs
- Maintained IT hardware by cleaning and repairing parts

## Achievements

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**NSA Codebreaker challenge | High performer** **2021**

- Analyzed website code to find vulnerabilities and exploit them
- Analyzed packet dumps and vpn logs for anomalies
- Conducted digital forensics on filesystem images to locate malware
- Reverse engineered malware written in C++ to find communication encryption details

**Defcon CTF | Finalist** **2022**

- Reverse engineered complex custom binaries to find vulnerabilities utilizing tools such as Ghidra and GDB
- Wrote scripts to exploit vulnerabilities within the challenge programs
- Built network infrastructure to provide 30+ team members access to competition network
- Managed 10+ endpoints to support heavy computational needs and network infrastructure
- Analyzed network traffic to discover exploit code used by attackers

**Pacific Rim Collegiate Cyber Defense Competition** | *1st place* **2022**

- Lead a team of students in defending 20+ endpoints against an active red team
- Utilized Bash scripting to secure linux hosts during engagement
- Created documentation for Linux initial access lockdown, operating system hardening, and incident response

**Collegiate Penetration Testing Competition West** | *3rd place* **2022**

- Lead a team of 6 students conducting vulnerability assessment and penetration testing in a simulated business network
- Utilized initial access techniques to gain access to various endpoints
- Established persistent administrative access in Active Directory successfully exfiltrating simulated PII
- Synthesized findings into an extensive 50 page penetration test report, all within 24 hours.

**National Collegiate Cyber Defense Competition** | *5th place* **2022**

- Competed against the top 10 universities in the nation to defend 20+ endpoints from active red team operations
- Analyzed Linux endpoints for vulnerabilities and developed patches for them
- Tracked down and eliminated custom built, polymorphic, Go obfuscated, multi-binary malware utilizing novel techniques within the linux ecosystem

**Pacific Rim Collegiate Cyber Defense Competition** | *1st place* **2024**

- Lead a team of students in defending 10+ endpoints against an active red team
- Deployed Ansible playbooks for security through DevOps
- Created and presented a "state of the network" presentation in front of mock board of directors

## **Extracurricular**

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**Oregon State Security Club** | *Lab Manager*

- Rebuilt club infrastructure to use on-premise hardware
- Managed 20+ endpoints including aws servers, virtual machines, and custom routers
- Developed on-demand access capabilities for 50+ students to practice various cybersecurity skills
- Wrote documentation and guides to help future lab managers maintain the infrastructure
- Gave multiple presentations about various topics in cybersecurity and system administration

**Oregon State Linux Users Group** | *Vice President*

- Presented various topics to the club to further knowledge on the Linux operating system
- Led multiple discussions on Linux topics including security and automation