Alicia Thoney

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Education

- **University of Central Florida** — Orlando, FL
  Master of Science - Computer Engineering — *August 2024 - Present*
  Courses: *CAD for VLSI, Adv. Verification, Fundamentals of VR*

- **University of Wyoming** — Laramie, WY
  Bachelor of Science - Computer Science; GPA: 4.0 — *August 2020 - June 2024*
  Courses: *Operating Systems, Algorithms and Data Structures, Discrete Structures, Compiler Construction, Networking, Computer Security, Secure Software Design, Computability and Complexity*

Skills Summary

- **Languages** Python, PHP, C++, JavaScript, SQL, Bash, Java, Kotlin, Go, GraphQL, HTML5, CSS
- **Frameworks** Next.js, React, Redux, Bootstrap, Tailwind CSS, Flask, Puppeteer, NodeJS, LAMP
- **Tools & Platforms** Git, Github, Bitbucket, Vercel, Docker, Figma, DDEV, AWS Amplify, Linux, Windows
- **Soft Skills** Collaboration, Critical Thinking, Attention to Detail, Public Speaking, Leadership

Experience

- **Graduate Researcher** — Orlando, FL
  University of Central Florida / Design of Resilient Architectures for Computing (DRACO) Lab *Aug 2024 - Present*
  - **Research:** Exploring advanced topics in computer engineering and software through side channel analysis. Designing and executing experiments, gathering data, and applying statistical analysis to evaluate the performance of system architecture.
  - **Lab Management:** Overseeing the configuration and upkeep of lab systems, including computing resources and network infrastructure, to ensure operational efficiency and security.
  - **Mentorship & Collaboration:** Supporting undergraduate researchers through mentorship and fostering a collaborative learning environment. Assisting in research methodologies and contributing to the success of ongoing projects.

- **Software Developer** — Remote
  Wyolution LLC (Contractual) — *Dec 2022 - Present*
  - **PHP Migration:** Led migration of web apps from PHP7.x to PHP8.x ensuring backwards compatibility for smooth end-user transitions. Analyzed code bases, updated deprecated functions, and enforced PHP8.x standards.
  - **Agile Development:** Supported the on-boarding and ongoing development of three junior developers, leading bi-weekly sprints aligned with project requirements.
  - **Browser Automation:** Developed Node.js scripts utilizing Puppeteer to scrape dynamic assets and automate the production of detailed reports.

- **Supplemental Instruction Leader/TA** — Laramie, WY
  University of Wyoming (Part-time) — *Aug 2022 - Dec 2023*
  - **Curriculum Development:** Enhanced student comprehension through interactive learning activities and clear explanations.
  - **Student Support:** Promoted a positive learning environment by fostering inclusivity and addressing student concerns.

- **Undergraduate Researcher**
  University of Wyoming / Cybersecurity Education and Research (CEDAR) Lab (Part-time) *Apr 2021 - Jun 2023*
  - **Leadership:** Led a team of five undergraduate students in the development of an informational, security-focused web application.
  - **Documentation:** Coordinated the documentation and resolution of bugs.

- **Software Developer** — Remote
  Rocky Mountain Herbarium (Part-time) — *Jun 2022 - Jun 2023*
  - **Collaborative UI/UX Design:** Worked with Figma to collaboratively design UI/UX prototypes, ensuring user-friendly interactions and aesthetics.
  - **End-to-End Implementation:** Implemented design choices on both the front-end and back-end, integrating REST APIs for data handling in the digital field guide for Wyoming's flora.

- **Critical Infrastructure Security Intern** — Remote
  Idaho National Laboratory (Full-time) — *Jun 2021 - Oct 2021*
  - **Analysis:** Supported structured and unstructured threat analysis.
  - **Research and Reporting:** Utilized open-source tools to create reports and conduct research.

Projects

- **Hardware Side Channel Attack Visualization:** Researched new ways to visualize power-based hardware side channel attacks on the Advanced Encryption Standard (AES-128) through the lens of correlation power analysis (CPA) for enhanced understanding of the process. Tech: Python, Matplotlib, seaborn (Spring '24)
- **Threat Information Assistant:** Researched Cyber Threat Intelligence (CTI) data feeds and data visualization techniques to build a web application that compiles and displays vulnerabilities associated with a specific software configuration. Utilizes the Cybersecurity and Infrastructure Security Agency's (CISA) Known Exploited Vulnerability database to graphically display CTI leveraging the Structured Threat Information Expression (STIX) language. Tech: Go, PostgreSQL, Javascript, Bootstrap, STIX (Summer '22)
- **Jangseung:** Assisted in the development of a preprocessor that limits the effects of adversarial perturbations, slightly altered data used to confuse machine learning models, without impeding accuracy. Jangseung was created to guard support vector machines (SVMs) from poisoned data by utilizing anomaly detection algorithms. Tech: Python. (April '21 - June '22)
- **SARS-CoV-2 Diagnostic Assay:** Assisted in the development of the Surface-enhanced Raman spectroscopy (SERS) Immunoassay for SARS-CoV-2 diagnoses. Contributed to code that analyzed resulting spectrum and generated test results. Tech: Python (August '20 - April '21)

Publications

- **Paper: Using ACL2 To Teach Students About Software Testing** Explores the integration of ACL2 in an educational setting to teach software testing, focusing on ACL2's tools for counter-example generation to analyze checksum algorithms for error detection (Ruben Gamboa, Alicia Thoney)

Talks and Presentations

- **Thoney, A.** "Hardware Side Channel Attack Visualization". Undergraduate Research Day, University of Wyoming. Apr. 2024
- **Thoney, A.** "Project-Based Learning with Micro:bits". Wyoming Computer Science Teachers Association (CSTA) conference. Aug. 2023 Presented a workshop on using Micro:bits to introduce computer science fundamentals.
- Seidel, E., Moore, K., **Thoney, A.,** Roberts, C., Walker, S., Sopko, G. University of Wyoming Recruiting Outreach. Sheridan High School, Bighorn High School, Tongue River High School. May 2023
- **Thoney, A.** "Improving CS Outreach Events in the A/synchronous Era". Invited Seminar. Wyoming State Capitol Legislative Session. Feb. 2023
- Gamboa, R., **Thoney, A.** "Using ACL2 To Teach Students About Software Testing". ACL2 Conference. May 2022
- Brown, G., **Thoney, A.,** Roth, A. "Impacts of Science Initiative Funding on Students". Sheridan Rotary Club. Feb. 2022

Honors and Awards

- College of Engineering and Physical Sciences Outstanding Senior - 2024
- EECS Honor Book Award - 2023
- Wyoming Educator Hackathon Winner - 2022
- Walmart Girls Who Code Scholarship Recipient - 2021
- Tau Bet Pi Outstanding Freshman - 2021
- University of Wyoming Trustees' Scholarship - 2020

Activities and Outreach

- **Crocheting Knights** — Member
  Crochet Club — *Jan 2024 - Jun 2024*
- **School of Computing Undergraduate Researcher (SURE)** — Member
  Research Internship — *Jan 2024 - Jun 2024*
- **STEM Carnival** — Presenter
  Elementary-level STEM engagement — *Sept 2023*
- **Women in Technology** — President, Founder
  Successful re-brand of WiCyS. Expanded club's focus to promote inclusivity — *Aug 2023 - Jun 2024*
- **NWCCD Software Camp** — Lead Instructor, Curriculum Developer
  6-9th Grade Summer Camp — *Summer 2023, 2024*
- **UPE Honor Society** — Vice President
  Computer Science Honor Society — *Jan 2023 - Apr 2024*

- **COWGIRLS in STEM** — Lead Instructor, Curriculum Developer
  Outreach and Mentorship Program for Wyoming Girls — *Summer 2022, 2023*
- **Women in CyberSecurity (WiCyS) University of Wyoming chapter** — President, Founder
  Educational Club and Supportive Community — *Sept 2021 - Jun 2023*
- **The Artful Craft of Science (TACoS)** — Lead Instructor, Curriculum Developer
  4-6th Grade Summer Camp — *Summer 2021, 2022, 2023*
- **CLOCKWISE Bootcamp** — Participant
  Software Engineering Hackathon — *Apr 2021*
- **Wyoming Research Scholars Program** — Member
  Research Internship — *Aug 2020 - Jun 2023*