Robin Simpson

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Experience

Microsoft May 2025 – August 2025
Technical Program Manager Intern

- Enhanced **AKS (Azure Kubernetes) security** framework through internal protocol analysis and implementation.
- Authored **PDRs** (Product Design Reviews) to drive technical decisions and coordinate cross-functional teams.
- Resolved critical bugs and user feedback through **month-long sprints** with stakeholders and teams within Azure.

National Renewable Energy Laboratory September 2024 – May 2025
Software Engineer Intern

- Improved **backend** performance by **26%** through implementing loading strategies and preprocessing.
- Enhanced system reliability through **unit tests**, bugs fixes, and automation scripts (e.g., **Bash**, **docker-compose**).
- Modernized **frontend** with skeleton loading and interactive UI, reducing load times from **300 to 20 seconds**.

Los Alamos National Laboratory May 2024 - August 2024
High Performance Computing Intern

- Built and managed a 10-node **HPC Linux** cluster using **Ansible**, **Libvirt**, **AWS S3**, and **Cloud-Init**.
- Enhanced performance by deploying **containerized services** on network switches, reducing server load by **11%**.
- Implemented **MPI** and **SLURM** for job scheduling, with **Telegraf** and **Grafana** for monitoring and scalability.

NASA January 2024 – May 2024
Software Developer Intern

- Created a search engine with **Elasticsearch** and **FastAPI** to index thousands of NASA technical documents.
- Designed **Python/Figma** dashboards improving cost tracking and operational reporting by **25%**.

Lawrence Livermore National Laboratory May 2023 – August 2023
Software Engineer Intern

- Maintained a data management app with **FastAPI** and **MongoDB**, improving retrieval speed by **20%**.
- Developed **RESTful** APIs ahd **unit + integration tests**.

Argonne National Laboratory May 2022 – August 2022
Software Developer Intern

- Mapped critical infrastructure data and connections on arc + heatmaps using **GeoPandas** and **Mapbox**.
- Created interactive visualizations with **Dash**, **Plotly**, and **Python** to enhance data accessibility for stakeholders.
- Integrated **Unity 3D** simulation for infrastructure failure impacts and deployed on **Heroku**.

Skills

System & Embedded: C, C++, Python, SystemVerilog, FPGA Design, Arduino, STM32, SPI, I2C

DevOps & Cloud: Git, CI/CD, Docker, Ansible, AWS, Azure, GCP, Podman, Libvirt, Vim, VSCode, Grafana

Web & Data: Python, Java, JavaScript, SQL, Flask, React, Dash, Jupyter Notebook, REST APIs, GraphQL

Education

California Polytechnic State University San Luis Obispo, CA
Bachelor of Science in Computer Engineering *December 2025*

KTH Royal Institute of Technology Stockholm, Sweden
Exchange Student/Study Abroad

Other Experience

Cisco x Cal Poly September 2024 - March 2025

Developer and Technical Product Manager

- Developed a web-based anomaly detection system for manufacturing test data using an **autoencoder** and the **Streamlit framework**, using **MongoDB** as the backend for data storage.
- Deployed the system on the **cloud** using **Amazon EC2** and **Route 53**.
- Integrated **CI/CD** pipelines to automate testing, image building, updating, and deployment.
- Led a team of 5 using **Agile** methodology, assigning tickets and tasks with weekly sprints.

San Luis Obispo Climate Coalition x Cal Poly August 2023 - May 2024

Developer

- Developed BinMaps, a web app for aggregating trash, recycle, and compost bins on a user-editable map using **Mapbox, JavaScript, Node.js, and Firebase.**
- Designed an interface with bin details such as location and image data allowing easy user identification.
- Enabled users to add and update bin locations with details like coordinates and images.
- Increased proper waste disposal rates by **12%** in key areas through improved bin accessibility.

Posters, Presentations, and Publications

- **Robin Simpson**, Anvitha Ramachandran, Dohyun Lee, "Containerization on Switches", *Supercomputing 2024*, (November 2024, Atlanta, GA). https://doi.org/10.2172/2429299.
- **Robin Simpson**, Dr. Pei Zhang, Dr. Ninqiao Li, "Integrating Robots in Hospitality: Opportunities Through Image Analysis", *NCUR* , (April 2024, Long Beach, CA).
- Contributions to "RUI: Harnessing Rubin Observatory Data to Prepare Tomorrow's STEM Leaders: Galaxy Evolution and Large Scale Structure", *NSF Project Award Number: 2205976*, (Louise Edwards, PI, Cal Poly, September 2023 - April 2024).
- **Robin Simpson**, "OneLaunch Threat Response", *DOE Conference*, (August 2023, Washington, DC).
- Yash Raj Singh, Jeffrey Yum, **Robin Simpson**, "Darc: Empowering LEP/MOD Test Data with Efficient Archive and Search", *Summer Slam*, (August 2023, Livermore, CA).

Projects

Nixie Tube Thermo-hygrometer | *C, STM32, Microcontrollers*

- Designed a thermo-hygrometer with dual IN-14 nixie tubes display from a DHT-11 **sensor**.
- Implemented an **STM32 microcontroller** for real-time data processing using KD155ID1 **driver chips**.
- Powered the system with a 12V AC to 170V DC boost converter to ensure stable operation of the nixie tube display.

Pipelined RISC-V CPU on Basys3 | *SystemVerilog, Vivado, FPGA Design*

- Designed and implemented a 5-stage pipelined **RISC-V MCU** using **SystemVerilog** on a **Basys3 FPGA** board.
- Utilized **Vivado** for functional and timing simulation to ensure system stability and accuracy.

SQL Remake | *C++, Data Structures, File Systems*

- Developed a **SQL** remake using **C++**, implementing data structures and algorithms to manage operations.
- Created a command-line interface and batch processing, allowing users to execute SQL commands.
- Simulated a database as a local file system using text files, handling file I/O operations for data.

Leadership

Deep Learning Society (DLS) | *Machine Learning, Regression Models*

- Led weekly meetings to discuss and teach machine learning principles, including **regression models**, supervised learning, and neural networks.
- Delivered lectures and facilitated discussions, improving the technical understanding of **machine learning** among society members.

Google Developer Student Club (GDSC) | *Web Development, Cloud Computing*

- Co-founded and launched Cal Poly's GDSC chapter.
- Organized and led weekly workshops covering **web development**, **cloud computing**, and engineering principles.