CV - Naomi Rehman

https://naomirehman1008.github.io/website/
narehman@ucsc.edu

EDUCATION

University of California, Santa Cruz

Bachelor of Science, Computer Engineering, GPA: 3.7 — Expected March 2025
Bachelor of Arts, Computer Science, GPA: 3.8 — Expected March 2025

Relevant Coursework: Computer Architecture (Undergraduate Level), Computer Architecture (Graduate Level), ASIC Systems Design (Graduate Level), VLSI, Parallel Programming, Compilers
Senior Thesis: Frontend Confidence Mechanism, Advised by Prof. Heiner Litz (Winter 2025)
Honors: Dean's List (Fall 2020-Fall 2021, Fall 2023-Present), College Scholars Program (2021)

RESEARCH EXPERIENCE

UCSC, Computer Science and Engineering Department

Undergraduate Researcher, Mar. 2024 - Present
Advisor: Prof. Tyler Sorensen
Description: Empirical testing of scheduling properties (specifically forward progress) in consumer GPUs.
Contributions:

- Built a website hosting thousands of cross-platform conformance tests to investigate forward progress properties in GPUs.
- Automated the generation of conformance tests by compiling concurrent pseudo-code to WGSL.
- Identified several forward progress issues, which are being investigated as security vulnerabilities.

UCSC, Computer Science and Engineering Department

Undergraduate Researcher, Dec. 2023 - Present
Advisor: Prof. Heiner Litz
Description: Developing a confidence mechanism for predicting mispredictions in CPU frontends.

- Implemented the mechanism in Scarab, a C++ cycle-accurate CPU simulator.
- Leveraged custom PMUs, data analysis, and visualizations to find and understand areas with poor performance.
- Built ML models to improve performance with a preliminary accuracy of 95%.

INTERNSHIPS

NVIDIA - Architecture Group

GPU Architecture Intern, Jun. 2024 - Sep. 2024
Project: Developed testing for forward progress features and Just-In-Time (JIT) execution using a combination of scripting, C programming, and GPU assembly, and identified multiple bugs.

Coolfish Robotics

Robotics Intern, Jun. 2023 - Aug. 2023
Project: Designed and implemented an embedded system with wireless communication capabilities.

NASA Goddard Space Flight Center - NGXO
Engineering Intern, Sept. 2022 - Dec. 2022
Project: Engineered a novel mechatronic system to automate an x-ray telescope manufacturing process, saving 4 hours of active labor per mirror segment.

WORK EXPERIENCE
PinpointAVL - Transportation Technology
Engineer, Jun. 2022- Aug. 2022, Jan. 2023 - June. 2023, Sept. 2023 - Dec. 2023
Created an automatic passenger counting system, detecting boardings with 97% accuracy for half the cost of existing systems. Manufactured PCBs and designed electronics enclosures.

LEADERSHIP
Slugbotics - Professional Development Workshop for Minorities
Organizer and Panelist, Oct. 2024
Organized and led a workshop on getting involved in research and internships, which included a lecture on internships, a panel discussion, and 1:1 resume feedback.

Slugbotics - Arm Team
Project Lead, May. 2023 - Dec. 2023
Founded and led a team in developing an intelligent robotic arm. Developed project goals and milestones, designed and manufactured a robotic arm, taught other students CAD. Researched and tested AI models and developed kinematics control code.

Slugbotics - Mate Project
Mechanical Lead, Dec. 2020 - May 2023
Led a team in developing the frame and manipulators for an underwater robot. Created project goals and timelines, coordinated progress and collaboration with other subteams, taught members CAD.

TECHNICAL SKILLS
High Level: C/C++, Python, Matplotlib, PyTorch, Pandas, CUDA, WebGPU, Bash Scripting
Low Level: CPU Architecture, GPU Architecture, Scarab (cycle-accurate CPU simulator), CPU/GPU Assembly, Verilog/SystemVerilog, CMOS Logic, FPGAs, Parallel Programming, Embedded Systems
Other: Ubuntu, Git

PRESENTATIONS
ACMConf, Santa Cruz, CA, May 2024, N. Rehman. “Confidence: a Light-Weight Instruction Prefetcher” (lecture and poster)

CERTIFICATIONS
Coursera Neural Networks and Deep Learning, 2023
Coursera Hyperparameter Tuning, Regularization, and Optimization, 2023
Coursera Structuring Machine Learning Projects, 2023
Coursera Convolutional Neural Networks, 2023

AWARDS
CRA Outstanding Undergraduate Researcher Award, Honorable Mention 2025