

Andrew Alex

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Education

University of California, Santa Barbara

Master of Science, Computer Science, *September 2022 - June 2024 (Expected)*

Advisor: Jonathan Balkind **Research Focus:** Programming Languages and Computer Architecture

University of California, Los Angeles

Bachelor of Science, Mathematics of Computation, *June 2018*

Industry Experience

AMD

Research Intern on Future CPU Architecture Team, *Fall 2023*

- Investigated various meta-heuristics and developed tools to apply these to CPU micro-architectural design space exploration problems

Siemens EDA

R&D Intern on Veloce Prototyping System Team, *Summer 2023*

- Designed and developed algorithms to identify integrated clock gate and output data double rate structures in clock tree netlists

UCSB Computer Science

Teaching Assistant

- Winter 2023 and Spring 2023 - CS 154: Computer Architecture
- Fall 2022 - CS 9: Intermediate Python Programming

Zillow Group

Senior Software Engineer, *February 2021 to August 2022*

Software Engineer, *May 2019 to February 2021*

Associate Software Engineer, *August 2018 to May 2019*

Trulia Data Engineering Intern, *Summer 2017*

- Lead team of 3 other developers to build a new GIS matching system for property data using Spark and Kafka that reduced new data onboarding time in the AI organization from weeks to a day of developer time
- Interviewed engineering candidates for developer roles on our team and mentored new hires
- Gave technical and product presentations to other engineering teams as well as non-technical product managers to encourage adoption of our teams products including a company wide engineering summit
- Prototyped and pitched a Docker-based development and deployment setup to engineering leadership to migrate a legacy web application to a more modern environment in AWS
- Optimized layout of Lucene search index used to store street segment data to allow for faster lookup times improving the end to end latency of our web application by ~30%

Research

University of California, Santa Barbara ArchLab, *September 2022 to Present*

On the Generality of Matrix Multiplication - In PLARCH 2023 (follow-up work ongoing)

- Investigating methods to compile general-purpose programs as matrix multiplications to take advantage of various matrix multiplication accelerators

Program Synthesis For Correct-by-Construction Processor Control Logic - In Progress

- Conducting research focused on using program synthesis to automatically generate control logic signals for a processor given an ISA specification and a partial processor implementation (i.e. without the control logic)
- Developed a compiler to generate Rosette program synthesis code from ILAng, a platform that enables formal modeling of ISAs and hardware components in C++ code

Teaching

University of California, Santa Barbara

- **Spring 2023** - CS 154: Computer Architecture
- **Winter 2023** - CS 154: Computer Architecture
- **Fall 2022** - CS 9: Intermediate Python Programming

Technology Skills

Proficient With: Java, Scala, C++, Python

Experience With: SystemVerilog, PyRTL, RISC-V, C, Racket, PHP, JavaScript

Tools and Frameworks: Spark, Kafka, Flink, Git, Terraform, Docker, Kubernetes

AWS Products: EMR, EC2, S3, RDS, Fargate