

ALEJANDRO ARMAS

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EDUCATION

University of California, Davis

Bachelor of Science in Computer Science

Davis, CA

Aug. 2017 – June 2023

EXPERIENCE

Software Developer

Mar. 2021 – Nov. 2021

Exploratory Systems Laboratory

Davis, CA

- Led effort to make ResilientDB; our blockchain fabric; more accessible and consumable for students, practitioners, and researchers at UCD and beyond by extending its toolkit and developing core documentation.
- Designing and developing Restful API endpoints in ResilientDB for client application democratic (i.e. through consensus) and decentralized (i.e. through replication) data store connectivity.
- Created ExpoBlog for graduate course (ECS265), reducing the on-boarding of colleagues from months to weeks.

Intern, MIT Summer Research Program

May 2020 - Aug. 2020

Massachusetts Institute of Technology

Remote, CA

- Investigated the underpinnings which confer advantages to reinforcement learning algorithms; where learning a distribution of cumulative sum of discounted rewards, is advantageous to merely learning its expected value.
- Implemented *quantile regression* loss function and back-propagation algorithms to learn underlying data distributions.
- Trained Agents in OpenAI's *Gym Atari* environments using Deepmind's *Acme* and *Reverb*, connecting remotely through the OpenMind Computing Cluster to perform GPU accelerated workloads.

Intern, Interdisciplinary and Quantitative Biology REU

Jun. 2019 - Aug. 2019

Universidad de Puerto Rico, Rio Piedras

Rio Piedras, Puerto Rico

- Clustered *Lassioglossum malachurum* by locomotor activity using k-means and created visualizations in ggplot2, tidy, and tibble; assisting biologists, replacing human categorization for large scale bee experiments.
- Communicated scientific findings by preparing manuscript for future publication, weekly presentations for collaborators and blog posts detailing lab procedures and technical details pertinent to our group's research.

PROJECTS

Davis IN-Order CPU | Chisel, Scala, RISC-V, Python, Pandas and Matplotlib

Mar. 2021 - Jun. 2021

- Implemented RV32I Pipelined CPU design in Chisel HDL complete with the following functional units: Branch Predictor, Hazard Unit, Forwarding Unit, ALU, ALU Control Unit, and Control Unit.
- Simulated and analyzed single-cycle design against pipelined design with four different branch predictors and varying saturation bits over six workloads and created visualizations using pandas and matplotlib.

D-Cash Wallet Web Server | C++, Stripe API, RapidJSON, POSIX threads, Git

May 2021 - Jun. 2021

- Built server wallet authentication, transfer, deposit, charge issuance (w. Stripe API integration) endpoints.
- Incorporated consumer-producer multi-threaded client request concurrent processing scheme.

Lineage-based Data Store | Python, Git

Jan. 2021 - Apr. 2021

- Oversaw team of 5 programmers, partitioned responsibilities, led meeting agendas and oversaw implementation of multi-version hybrid OLTP/OLAP database management system with novel *QueCC* concurrency protocol.
- Spearheaded performance critical development: in-memory record indexing and system memory management.
- Mediated system design for concurrency control, contention-free lazy record consolidation and data durability.
- Demonstrated and encouraged use of version control, unit-testing and best coding practices.

Manolo Landscaping | Django, Javascript, CSS Grid, CSS Flexbox, Photoshop, Illustrator

Nov. 2020 - Dec. 2020

- Developed and deployed a web application in Django featuring site routing, form field validation and an email forwarding service to support my fathers small business and bring in more customers during quarantine.
- Designed UI/UX prototype in Adobe XD; favicon, logo, site assets & other vector graphics in Adobe Illustrator/Photoshop.
- Implemented responsive mobile first layout in Javascript, CSS Grid/Flexbox and HTML based on design prototype.

TECHNICAL SKILLS

Languages: C/C++, Python, R, Risc-V, JavaScript, SQL (sqlite, postgres), \LaTeX , CSS, Markdown, HTML, Bash, Spanish

Frameworks: Crow, Django, Flask, Tidyverse, Bootstrap, React

Developer Tools: Git, Docker, Google Cloud Platform, Conda, VS Code, Windows WSL Terminal

Libraries: NumPy, PyTorch, Pandas, Matplotlib, Acme, Reverb, Gym