

Kaleb Crans

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EDUCATION

The University of California, Davis

Davis, CA

Bachelor of Science in Applied Mathematics, Computer Science Minor

Sep. 2020 – June 2023

- GPA: 3.65/4.00
- Computer Science Coursework: Object Oriented Programming, Data Structures and Algorithms, Computer Organization & Machine-Dependent Programming, Discrete Math, Databases, Machine Learning
- Math Coursework: Multivariate Calculus, Linear Algebra, Probability Theory, Real Analysis, Combinatorics, Stochastic Processes, Statistics, Differential Equations, Complex Analysis, Topology
- Outreach Coordinator for Davis Computer Science Club
- Dean's Honor List

PROJECTS

Titi Monkey Technology | *Python*

April 2022 – December 2022

- A multi-platform app written in python designed for running visual stimuli experiments with non-human primates
- Modular design to allow different researchers to run and modify experiments according to their specifications
- Uses PsychoPy for visual and audio purposes and as the base level of experiment control
- Wrote multiple GUI utilities to make common administrative tasks easier for end-users
- Created a system for managing configuration using JSON files
- Work done as part of a research internship with the Bales lab at UC Davis

L-Store Database System | *Python*

January – March 2022

- Developed a python-based version of L-Store, a lineage-based HTAP database system with columnar storage
- Experimented and visualized the effects of different bufferpool sizes on performance
- Implemented durability with a contention-free “merge” background process
- Created a simplified SQL-like query interface that supports operations like select, update, sum, increment and time-travel queries
- Used the threading Python module for multithreading with a strict 2PL concurrency protocol

Spectral Clustering in C++ | *C++, Eigen template library, Python/Matplotlib*

March 2021

- Wrote a version of the unnormalized spectral clustering algorithm in C++
- Used Eigen for matrix computations and linear algebra operations
- Also wrote a k-means algorithm implementation in C++ for performance comparison
- Tested on datasets from SNAP and from P. Fänti and S. Sieranoja
- Visualized clustering in action with Matplotlib

NON-TECHNICAL EXPERIENCE

Yogurt Shop Server

June 2022 – Present

Ted and Ron's

Elk Grove, CA

- I take and prepare orders at a frozen yogurt shop while working as part of a team
- I have done a bit of everything as it's a small mom-and-pop place

Undergraduate Reader

September 2021 – May 2022

UC Davis

Davis, CA

- Performed grading duties in undergrad math courses
- Worked with professors and TAs to make grading schemes for homework assignments
- Have read for each course in the Real Analysis sequence, Combinatorics, and Intro to Abstract Math

TECHNICAL SKILLS

Languages: Python, C/C++, R, SQL, JavaScript, and HTML/CSS

Developer Tools: Git, Linux, Bash scripting, and Vim

Libraries: NumPy, Matplotlib, pandas, Tidyverse, PyTorch and TensorFlow