Aaron Danen

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Education

University of California, Davis – Computer Science and Engineering, 3.9 GPA Expected June 2027
Coursework: Data Structures and Algorithms, Computer Architecture, Object Oriented Programming
Honors: Dean's List, Tau Beta Pi Honor Society

Skills

Languages: C, C++, Python, Assembly
Tools: git, clang/gcc, CMake, Make, Anaconda, Linux
Libraries: SDL3, Pandas, Matplotlib, Numpy, Scipy

Experience

Data Engineering Analyst, UC Santa Cruz, Dept. of Astrophysics Aug 2022 - Sept 2023, Oct 2024 - Aug 2025

- Automated data retrieval and preprocessing pipelines for VERITAS and NICER telescope data using Python and Pandas, reducing manual labor by 10+ hours per week for researchers seeking up-to-date measurements
- Automated analysis and aggregation of data from 4 observatories, contributing to a $90,000 grant proposal
- Surveyed and met users visualization needs by enriching the data through statistical methods and using Matplotlib
- Leveraged existing NASA CLI tools into a Python interface with shell scripts and string processing algorithms

Expeditor, Shadowbrook Restaurant – Capitola, CA Feb - Aug 2023, June - Sept 2024

- Delivered food from the kitchen to guests in a ~100 table fine dining restaurant alongside 3-7 other Expeditors
- Connected guests, servers, chefs, and managers by relaying information such as customer requests and feedback

Open Source Contributions

BJET_MCMC, Open Source Statistical Analysis Software github.com/ohervet/Bjet_MCMC

- Improved runtime by 20% by running tests on a OpenHPC cluster to optimize Monte Carlo Markov Chain parameters
- Authored performance and optimization documentation page to practically save users computation time
- Contributed a feature that fits an exponential decay function to the Markov Chain convergence and reports to users

LLVM, Open Source Compiler Framework github.com/llvm/llvm-project

- Strengthened users experiences with the clang-repl tool by collaborating with other contributors to identify weaknesses, implement a %help command in C++ to clarify error messages and revise documentation
- Achieved a fast merge into the main branch by studying contribution guidelines following code formatting standards

Projects

CHIP-8 Interpreter github.com/aadanen/chip8

- Developed an interpreter for a classic retro programming language that supports all standard ROMs and automatically adjusts its behavior to resemble that of any significant CHIP-8 interpreter from the previous half-century
- Streamlined the build process to just a few commands by using CMake and minimizing dependencies
- Crafted a retro audiovisual experience with graphics, audio, and user input using SDL3

Kalos, A Compiler for LLVM's Kaleidoscope Language github.com/aadanen/llvm-kaleidoscope

- Studied lexical analysis and parsing theory before building a compiler by researching LLVM's IR and APIs
- Enabled users to incorporate Kaleidoscope into other programs by targeting standard object files

Activities

UC Davis Division 1 Competitive Programming Team
CS Tutoring Club Tutor
California All-State High School Honor Jazz Band