

Jack Alexander Cooper

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Education

University of California, Santa Cruz
Bachelor of Science in Computer Science

Santa Cruz, CA
August 2021

Projects

PyImgScale | Python

January 2024 - Present

- Developing an open source local GUI-based image processing application using PyQt5 and Pillow, designed for efficient upscaling, downscaling, and format conversion of images. Features an intuitive interface for easy navigation and selection of images within the filesystem.
- Implementing features including customizable file system navigation, multithreaded image processing for enhanced performance, and support for popular image formats (PNG, JPG, BMP, TGA, PDF).

Personal Website | JavaScript

November 2023

- Maintaining a professional personal website showcasing my portfolio, technical skills, and projects, serving as a dynamic platform to engage with others online.
- Utilized modern web development technologies and best practices, such as using react.js for responsive design techniques, to create an intuitive, visually appealing, and mobile-friendly website.

PokerCore | C++

June 2022

- Developed an open source poker hand evaluation program. Among the first C++ implementations of the bitwise algorithm.
- Built with portability and cross-compatibility as a desirable aspect. Learned GoogleTest to use as the unit-testing framework and learned Cmake for project management and compilation. Designed and built with modularity in mind.

Super Mario Level Generator | Python

July 2020

- Leveraged genetic algorithmic techniques to implement Design Element (DE) encoding, enabling the generation of visually appealing Mario levels with variable-length sequences of design elements.
- Innovated custom crossover and mutation operations for the DE encoding, effectively producing diverse levels with different design elements through collaboration with AI.
- Optimized level generation process while constrained to specific design objectives through the use of a generational genetic algorithm designed with fine-tuned fitness functions weighing design elements of a level.

Ogar3 Agar.io Bot | JavaScript

July 2020

- Enhanced Ogar3 Agar.io AI by transitioning it to a behavior tree model, resulting in improved decision-making and more sophisticated gameplay strategies.
- Achieved an 80% win rate against the original AI.

Skills

- Programming Languages:** C/C++, Python, and JavaScript.
- Knowledge:** Data Structures, Algorithms, Big Data, Computer Architecture, and Data Analysis.
- Frameworks and Databases:** React.js, PostgreSQL, GoogleTest, and Jest.
- Libraries:** NumPy, SciPy, PyQt5, SQLAlchemy, and Pandas.
- Tools:** PyCharm, Notepad++, git, debuggers, Visual Studio, npm, pip, Anaconda, Jupyter, CMake, Docker, and Obsidian.

Work Experience

Peet's Coffee

Tysons, VA

Barista

August 2023 - Present

- Prepared and served a variety of coffee and tea beverages, including espresso, cappuccino, latte, and specialty drinks, according to Peet's quality standards while providing excellent customer service.

LensCrafters

Palo Alto, CA

Sales Associate

February 2023 - August 2023

- Designed and implemented an 'express check-in' system for patients, utilizing a greedy heuristic to reduce average wait times by 25%, resulting in positive customer satisfaction and increased operational efficiency.

Best Buy

San Carlos, CA

Sales Associate

August 2022 - February 2023

- Nurtured robust customer connections by delivering exceptional customer service, resulting in numerous repeat customers who specifically asked for assistance by name when seeking product knowledge.