

Allen Cao

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EDUCATION

University of California, Berkeley

BA in Computer Science, GPA: 3.957/4.0

Berkeley, CA

August 2020 - May 2023 (Expected)

EXPERIENCE

Leopard Imaging

Fremont, CA

Software Engineering Intern

May 2021 - August 2021

- Accelerated the collection of printed circuit board assembly (PCBA) failure data by developing a defect simulation tool that photoshops various defects on PCBA images and saves transcripts on said images.
- Created an image filter tool that accurately and rapidly detects faulty wire soldering on PCBAs with over 95 percent correctness on a dataset of PCBA images.
- Used Python (PyQT5 and Tkinter) to improve user interactions with camera tools by integrating setting selections and easily viewable logs.
- Tested and reported on a camera software tool for a client (Amazon.com) to assure product quality; identified over 20 fatal vulnerabilities in the tool.

UC Berkeley Electrical Engineering & Computer Sciences

Berkeley, CA

Academic Intern

June 2021 - August 2021

- Assisted 40+ students enrolled in a CS61BL (Data Structures) lab section on a weekly basis.
- Helped students debug or clarify labs assignments and projects involving implementing data structures and algorithms from scratch, solving programming puzzles, and analyzing time complexity.

AnX Robotica Corp

Pleasanton, CA

Software Engineering Intern

June 2020 - August 2020

- Worked closely with the Director of Engineering to research solutions addressing imaging issues during MRI scans, such as image blurriness, lens distortion, and faulty software.
- Used C++ OpenCV to design and implement an algorithm that calibrates and undistorts endoscope fisheye lenses.
- Derived a polynomial regression formula from the correlation between distance from camera lenses to objects and brightness of pixels; implemented this model into software to estimate real world distances during processing of bowel images.

PROJECTS

Pathfind Visualizer | JavaScript (React), HTML, CSS

<https://allencaoo.github.io/Pathfind-Visualizer>

- Built an online educational React application to visualize pathfinding algorithms on a 2D grid for the purpose of assisting students studying UC Berkeley's data structures course (CS61B).
- Optimized algorithm runtimes to calculate results instantaneously and display visited cells and paths smoothly.
- Visualizable algorithms include BFS, DFS, Dijkstra's, A*, Greedy Best First Search, Randomized Prim's, and Inverted Randomized Prim's (self-discovered).

Escape Stanford: a Maze Escape Game | Java

- Used the StdDraw library to build a 2D world exploration game with pseudo-random seed-based world generation.
- Synchronized user input with refresh rate to maximize smooth gameplay.
- Supports: intermediate mini-games, custom avatars, timer option for mini-games, and multiple levels.

Gitlet | Java

- Designed and implemented a version control system for local and remote repositories.
- Built organized hash-based storage system for commits, branches, and remote repositories.
- Supports the following commands: init, add, commit, rm, log, global-log, find, status, checkout, branch, rm-branch, reset, merge, add-remote, rm-remote, fetch, push, pull.

LawScraper | Python (Beautiful Soup), Node.js (Express.js), HTML, CSS

- Built an automated mailing system mainly consisting of a bot that sends emails of newly passed laws web-scraped from government websites to subscribers on a mailing list.
- Implemented an Express.js backend that operates a frontend sign-up page and fetches sign-up data in JSON format.

Scheme Shell | Python, Scheme

- Implemented a Scheme interactive interpreter that displays results of single Scheme commands in the terminal.
- Procedures include: define, if, cond, and, or, let, begin, lambda, quote, cond, car, cdr, cons, enumerate, merge, nondecreaselist.

SKILLS

Programming Languages

Python, Java, JavaScript, C/C++, SQL, Solidity, Scheme, Bash, HTML/CSS

Frameworks/Applications

NumPy, OpenCV, Node.js, Express.js, React, JUnit, Git, Linux, Blockchain (Ethereum), SQLite