

Allen Cao

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EDUCATION

University of California, Berkeley

BA in Computer Science, GPA: 3.86/4.0

Berkeley, CA

August 2020 - May 2024

- Relevant Coursework: Data Structures, Efficient Algorithms, Computer Architecture, Database Systems, Operating Systems, Artificial Intelligence, Principles of Data Science, Computer Security, Information Devices (circuits), Linear Algebra, Discrete Mathematics and Probability

SKILLS

Programming Languages: Python, Java, C/C++, C#, TypeScript/JavaScript, HTML/CSS, Ruby, SQL, Scala, Bash, Go

Libraries/Frameworks: Node.js, Express, React, Spring, Flask, Ruby on Rails, GraphQL, Apache Spark/Hadoop, MySQL, .NET, OpenCV

Tools/Applications: AWS (Lambda, Cloudformation, DynamoDB, Athena/Glue, S3, API Gateway, RDS), Git, MongoDB, Linux, Unity

WORK EXPERIENCE

Amazon Fashion

Seattle, WA

Software Development Engineer Intern

May 2023 - Present

- Designed and implemented a highly efficient internal database management UI tool to enable user-friendly data search and modification, reducing week-long tasks to mere seconds.
- Used Apache Spark to implement a database partitioning scheme to significantly reduce data retrieval workloads and achieve scale independence, ensuring consistent query latency regardless of data volume.
- Developed a scalable REST API using API Gateway, integrated with a responsive React frontend and AWS Lambda and Athena/Glue backend to serve thousands of Fashion content managers and engineers.
- Constructed deployable cloud infrastructure using AWS Cloudformation/CDK and integrated across multiple development environments.

Baxter International

Deerfield, IL

Software Development Engineer Intern

June 2022 - August 2022

- Integrated a software interrupt service routine into medical devices to monitor physical disturbances, collect data, and generate logs to an end-user database in order to fully comply with FDA regulations.
- Upgraded internal API by developing a logging queue and integrating throughout codebase to resolve thread-safety concerns and optimize multi-threading.
- Constructed a streamlined machine learning workflow that includes a data pipeline feeding into a LDA classifier; resulted in a model with near perfect accuracy on testing data.
- Automated internal GUI quality control by building an OpenCV application to identify missing design requirements from GUI images.

UC Berkeley EECS, Barsky Lab

Berkeley, CA

Virtual Reality Researcher

August 2022 - Present

- Creating Unity plugins to compile and integrate vision filtering algorithms into dynamic link libraries for Android and IOS app development.
- Developing a network-based research workflow to facilitate cross-language and cross-platform communication in order to test C/C++ algorithms in .NET/C# apps.

Leopard Imaging

Fremont, CA

Software Engineering Intern

May 2021 - August 2021

- Accelerated the collection of PCB failure data by developing a defect simulation tool that photoshops various defect graphics on PCB images and logs information on said images.
- Created an OpenCV image filter tool that accurately and rapidly identifies faulty PCB components with over 95% correctness.

PROJECTS

Pathfind Visualizer

React

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

- Built interactive web visualization tool for pathfind and maze generation algorithms on a 2D grid.
- Released the project to over 500 students in UC Berkeley's data structures (CS61BL) course as a visual learning tool.
- Implemented algorithms such as BFS, DFS, Dijkstra's, A*, Greedy Best First Search, Randomized Prim's, and Inverted Randomized Prim's.
- Integrated mouse drag interaction feature to visualize algorithms on user-defined mazes.

tAI

MongoDB, Node, Express, React

- Built an AI-powered educational tool delivering assistance to all levels and subjects generating personalized reports to educators.
- Features include feedback-based quizzes, conversational office hours, and grading interface.
- Utilized MongoDB to manage content and student feedback, Express.js and AI text generation APIs for backend, and React.js for dynamic UIs.

Pintos OS

C, x86 Assembly

- Programmed a uniprocessor operating system to handle and manage interrupts, system calls, memory allocation, thread scheduling, extensible file system (Berkeley FFS), caching, and virtual memory.
- Implemented thread and process synchronization throughout using locks, semaphores, and monitors.

Gitlet

Java

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