Zihan Zhao

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EDUCATION

University of California, Berkeley Aug 2021-May 2025

Bachelor's Degree in Computer Science (expected)

GPA: 3.88/4.00

Relevant Coursework:

CS: Computer Programs, Data Structures, Algorithm and CS Theory, Computer Architecture, Operating System and System Programming, Computer Networking, Database Systems, Machine Learning, Full-Stack Web Development

Math: Vector Calculus, Linear Algebra, Discrete Mathematics and Probability Theory, Differential Equations and Circuit Design

INTERNSHIP

Tencent, Shanghai, China - Software Engineering Intern June 2024-Aug 2024

Project 1: Monitoring System Bypass Configuration

- Developed a bypass configuration for front-monitor system to address the issue of high load and latency caused by the traditional backend method of fetching data for individual projects.
- Spearheaded the overall configuration design: Upon startup, the system determines whether to enable bypass and allows projects with bypass enabled to periodically batch fetch user performance data and logs from external monitoring systems after going live. The fetched data is written into memory and synchronized to the data warehouse.
- Completed backend development by realizing data fetching, conversion, and uploading functionalities using Go programming.

Project 2: Game Marketing Low-Code Development Platform AI Assistance

- Improved the code check process for AI agent to mitigate overload and delay issues encountered by large language models and help developers identify configuration and logic errors.
- Preprocessed code modules and extracted functions, variables, and multi-level dependencies; verified SQL and table creation statements and utilized EXPLAIN SQL to check database node configurations; displayed the review status of process inspection reports in the backend system; supported fuzzy search and optimized data loading speed through pagination and multithreading.

PROJECTS

EduHive Educational Technology Platform - Co-Founder & CTO Feb 2024-Present

- Worked in a team of 14 to develop a platform with an AI-driven matching system aimed at connecting students, researchers, and entrepreneurs worldwide for interdisciplinary collaboration.
- Led the development of recommendation system, frontend and backend architecture for the platform.
- Developed AI algorithms that incorporate large language models and graph neural networks (GNN) in PyTorch to match users with projects based on skills and requirements. Utilized NLP techniques for automatic tagging.

2D Third-Person Game Apr 2023-May 2023

- Wrote thousands of lines of Java code to craft a 2D game with dynamic map generation using Kruskal's algorithm for Minimum Spanning Trees
- Integrated a responsive engine to realize character movement, real-time status display, and customized character options.

Parallel Processing for Convolution Operation Optimization Nov 2023-Dec 2023

- Incorporated SIMD (Single Instruction, Multiple Data), OpenMP multi-threading, and Open MPI distributed computing techniques to optimize convolution processes within CNNs using C programming.
- Enhanced processing efficiency and scalability with a speed-up of 49.15x.

Database System Implementation Feb 2024-May 2024

- Constructed B+ Tree indexing, optimized SQL JOIN operations, and applied cost-based optimization of queries with dynamic programming algorithm.
- Wrote concurrency-safe database operations and adopted ARIES (Algorithms for Recovery and Isolation Exploiting Semantics) to maintain the atomicity and durability properties of transactions.

PintOS Kernel Implementation Sep 2024-Dec 2024

- Developed core components of the PintOS Kernel, including Process management, Thread management and Scheduling, Memory management, and File System.
- Implemented crucial system calls in Kernel, including exec(fork), wait, exit, pthread_start/join/exit, lock_init/acquire/release, sema_init/down/up, sbrk, malloc, calloc, realloc, create, open, read, write, remove, close, mkdir, chdir, readdir, etc.

Convolutional Neural Network Implementation Mar 2023-Apr 2023

- Implemented and tested key components of neural networks, including activation functions, convolutional, pooling, flattening, and fully connected layers, forward pass, and backpropagation.
- Explored batch processing, ReLU, SGD and ADAM optimizer, dropout, normalization, and regularization to enhance efficiency.
- Applied CNNs to real-world datasets, including MNIST and CIFAR-10 using libraries like PyTorch and NumPy.

SKILLS

Languages: Java, Python, C, Go, Node.js, JavaScript, HTML, CSS, SQL, Assembly, Scheme

Frameworks: Express.js, React, Django, Gin, Spring

Development Tools: Git, Jupyter Notebook, Logisim

Machine Learning Libraries: PyTorch, Sklearn, NumPy, Pandas, Matplotlib