Ben Xia

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Education

University of California San Diego Sept. 2024 – June 2025
Master of Science in Computer Science *[GPA: 4.00/4.00]*

University of California San Diego Sept. 2021 – June 2024
Bachelor of Science in Computer Science *Honors: Summa Cum Laude [GPA: 3.98/4.00]*
Courses: AI/Machine Learning, Deep Learning, Recommender Systems, Natural Language Processing, Operating Systems, Computer Security, Systems Programming, Data Structures, Algorithms, Digital Systems, Computer Architecture, Computer Graphics, Parallel Computing

Technical Skills

Languages: C, C++, Java, C#, Go, Python, x86/ARM Assembly, SQL, HTML, CSS, JavaScript/TypeScript, GLSL
Libraries/Frameworks: React, Node.js, NumPy, PyTorch, OpenCV, scikit-learn, OpenGL, Message Passing Interface (MPI), CUDA, OpenCL
Developer Tools: Git, Perforce, Jira, Confluence, GitHub Actions, Jenkins, Docker, Vim, Postman, Miro

Experience

Amazon, Software Development Engineer Intern Sept. 2024 – Dec. 2024

Niantic, Computer Vision Engineer Intern June 2024 – Sept. 2024
- Increased live preview performance by **150%** (frames per second) on Android devices, significantly enhancing app responsiveness and user experience by reducing micro-stutters and optimizing GPU kernels.
- Optimized real-time **Gaussian splat** training and rendering by implementing multithreading and switching to raster-based splat rendering, simultaneously improving overall performance and scene reconstruction quality by enabling greater frame processing.
- Partnered with UX designers to develop an intuitive **augmented reality** 3D space scanning preview by writing custom shaders and points of interest detectors, allowing users to easily identify under-reconstructed areas in real-time during scans.
- Implemented **real-time occlusion** support in Niantic 8th Wall's internal AR engine, elevating immersion in AR experiences.

Viasat, Software Engineer Intern June 2023 – Sept. 2023
- Reduced human intervention by **95%** for key swaps by overhauling modem UI with **TypeScript React** to automate manual commands.
- Enhanced modem/network security by updating interfaces and **Docker** containers to utilize new SSL certificates from key swap tool.
- Resolved race conditions for **real-time embedded systems** in C, preventing over **$5000** in potential aircraft antenna unit damages by redesigning state machines and restricting IPC messages between **operating system daemons** based on log analysis.
- Boosted code coverage from **0% to 90%** by introducing **Jest** as the new standard unit-testing framework and automating **50+** unit and end-to-end tests to mock user flow and backend responses.
- Seamlessly integrated multiple testing frameworks from **Go** and **JavaScript** into a single **CI/CD** pipeline via **Jenkins**.

UC San Diego CSE Department, Undergraduate Tutor Sept. 2022 – June 2024
- Instructed **1500+** students in **advanced algorithms**, **operating systems**, classical artificial intelligence, **machine learning** theory/implementation, scikit-learn, and **PyTorch**.
- Identified/patched **security vulnerabilities** for programming assignment autograders, eliminating most student autograder exploits.
- Achieved **100% student approval** across multiple courses by hosting office hours, and leading discussion sections to assist students with Python, C, ARM Assembly, and conceptual problems.

California Coast Credit Union, Data Analytics Intern June 2022 – August 2022
- Developed and deployed an executive dashboard for viewing company-wide metrics related to call volume, call types, number of active users, number of transactions, etc.
- Wrote automated **SQL** scripts/queries for fetching/compiling data across multiple databases for dashboard.

Projects

Four Seasons | C++, OpenGL, GLSL
- Four Seasons is a real-time, character-based, multiplayer 3D capture-the-flag shooter game, heavily inspired by classical music.
- Designed and implemented a **custom graphics engine**, with support for textures, 3D animations, shadow mapping, non-photorealistic rendering, dynamic lighting/environments, and particles via instanced rendering.
- Supported cross-platform development by developing custom operating system and architecture agnostic networking and graphics libraries, with cross-compatibility between macOS and Windows machines.

Steam Recommender System | Pandas, NumPy, Scikit-Learn
- Optimized models by **hyperparameter tuning** with grid search, cross-validation, and ensembling predictions.
- Utilized **natural language processing** techniques such as topic modeling to mitigate the cold-start problem.
- Ranked among the **top 0.3%** participants in **machine learning competition** in both regression and classification tasks.