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, Advanced Computer Vision, Natural Language Processing, Computer Graphics, Parallel Computing, Operating Systems, Computer Security, Data Structures, Algorithms, Computer Architecture, Virtualization/Cloud Computing

Technical Skills

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

Experience

Apple, Software Engineer II August 2025 - Present

Amazon, Software Development Engineer Intern Sept. 2024 – Dec. 2024
- Leveraged **AWS Bedrock Large Language Models** to design/deliver a new notification summarization feature to reduce user fatigue.
- Integrated safeguards for **customer-facing LLM endpoints** by enforcing **cryptographic signatures** against request forgery, **rate-limiting** requests, and Bedrock guardrails against adversarial user inputs.
- Built support for iOS time-sensitive notifications for an app with **200 million+** users and **10000+** transactions per second, enabling critical alerts to bypass Do Not Disturb settings with **AWS SNS**, Java and **Swift**.
- **Eliminated** manual developer intervention by building a self-service system with **React, Redux**, **AWS DynamoDB** and **ECS**, enabling marketing teams and automatic services to directly attach images to push notifications.

Niantic, Computer Vision Engineer Intern June 2024 – Sept. 2024
- Partnered with UX designers to develop an intuitive **augmented reality** 3D space scanning preview by writing custom GLSL 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.
- Boosted **Gaussian splat** reconstruction quality by multithreading training/rendering routines and switching to raster-based splat rendering with C++ and OpenGL, **increasing frames processed by 100%**, while simultaneously improving overall performance.
- Increased live preview performance by **200+%** (frames per second) on Android devices, significantly enhancing app responsiveness and user experience by reducing micro-stutters and **optimizing OpenCL GPU kernels**.

Viasat, Software Engineer Intern June 2023 – Sept. 2023
- 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.
- 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.
- Boosted code coverage from **0% to 90%** by introducing **Jest** as the unit-testing framework, automating **100+** 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 **machine learning** theory/implementation, scikit-learn, and **PyTorch**, **advanced algorithms**, **operating systems**, and classical **artificial intelligence**.
- 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.
- Identified/patched **security vulnerabilities** for programming assignment autograders, eliminating most student autograder exploits.

Projects

Steam Recommender | Pandas, NumPy, Scikit-Learn
- Ranked among the **top 0.3%** participants in **machine learning competition** in both regression and classification tasks.
- 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.

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 and gameplay by building custom operating system and architecture agnostic networking and graphics libraries.