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Connor Auyong

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Education

University of California, Irvine Irvine, CA

Bachelor of Science in Computer Science and Engineering *Expected 2026*

- Major GPA: 3.6
- Relevant Coursework: Data Structures and Algorithms, Embedded Software, Operating Systems, Design & Analysis of Algorithms, Intro to AI, Discrete Time Signals, Probability

Experience

Research Intern June 2025 – September 2025

NIWC Pacific *San Diego, CA*

- Resolved deep integration issues between the ROCK robotics framework (C/C++, Ruby, Orocos) and the AprilTag library, identifying mismatched build targets and incorrect include/link paths.
- Trained a *YOLOv11* detector (Python, PyTorch, OpenCV) on a synthetic underwater AprilTag dataset; conducted systematic augmentation experiments (occlusion, lighting, turbidity) to evaluate detection robustness.
- Implemented OpenCV overlay visualizations to benchmark classical AprilTag detection versus YOLOv11, identifying trade-offs in accuracy and robustness under varied conditions.
- Analyzed AUV log files with *pandas* and *matplotlib*, quantifying detection performance and identifying dataset limitations.
- Modified AprilTag-based measurement integration in the AUV's Kalman filter, ensuring updates only on valid stamped poses; improved pose consistency and reduced spurious resets.

STEM Center Tutor August 2023 – January 2024

Mount San Antonio College *Walnut, CA*

- Tutored C++, Python, and Java fundamentals (data structures, recursion, debugging) with an emphasis on clean code and problem-solving.

Projects

Smart Textbook | *TypeScript, React, Python, Flask, ElevenLabs/OpenAI API* April 2025 – Jun 2025

- Built a GPT-4 powered PDF reader for summarization and Q&A, reducing token use by 40%.
- Developed a real-time text-to-speech system with synchronized text highlighting, integrating ElevenLabs API for natural voice synthesis and achieving 98% text-audio alignment accuracy.
- Built a scalable Flask backend handling concurrent PDF processing and LLM interactions, with robust error handling and rate limiting, supporting documents up to 100MB with sub-second responses.

Embedded Software | *C, ATMega32, Atmel-ICE* April 2024 – June 2024

- Designed and implemented firmware for embedded systems, optimizing performance and enabling real-time interactions with LCD, keypad, and speaker components.
- Designed and implemented an alarm clock with keypad, LCD, and speaker integration.

PDF Listen App | *SwiftUI, Core Data, PDFKit, AVFoundation* Nov 2024 – Mar 2025

- Designed and implemented an iOS application using SwiftUI, enabling users to import, view, and listen to PDF content with seamless integration of PDFKit and AVFoundation for text-to-speech functionality.
- Leveraged Core Data for persistent data storage, enabling users to store and manage imported PDF documents across sessions, integrating directly with SwiftUI's environment.

Extracurriculars

Healthcare Cost Analysis | *Data Club at UCI* Jan 2025 - Mar 2025

- Uncovered hidden cost imbalances in HMO plans by applying multi-stage anomaly detection, revealing disproportionate Rx expenses for Non-SNP members.
- Identified 4,800 initial outliers using Inter-quartile Range (IQR) filtering, then refined detection with Local Outlier Factor (LOF) and Isolation Forest to isolate 500 high-confidence anomalies, improving interpretability and decision-making.

Technical Skills

Domains: Robotics, Computer Vision, Machine Learning, Sensor Fusion
Frameworks/Libraries: PyTorch, OpenCV, YOLO (v8/v11), scikit-learn, pandas, NumPy, Matplotlib
Embedded/Systems: C/C++, Orocos/ROCK, Atmel-ICE, CMake, Linux/Unix
Other: SwiftUI, React, Flask, Docker, Git
Certifications: AWS Certified Cloud Practitioner (Aug 2024 – Aug 2027)