Aidan Gray

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Santa Cruz, California

Professional Summary

Master's student in Computer Science with a strong foundation in distributed systems, infrastructure, and AI/ML. Experienced in software development, system and network analysis, and applied computer vision research. Skilled at analyzing and processing large datasets, troubleshooting distributed systems, and navigating large codebases. Passionate about solving problems, both large and small.

Key Skills

- Programming & Frameworks: Python, C++, Go, Java, PyTorch, scikit-learn, CUDA, vcpkg (C++ Package Manager)
- Systems & Networking: Distributed Systems, Chord DHTs, Paxos, RPC, Wireshark
- Data & AI/ML: Computer Vision, Reinforcement Learning, LLMs, Classical ML Techniques (PCA, SVMs, EM, K-means)
- Cloud & APIs: Azure Blob Storage, Azure Cognitive Services, REST API Integration
- Tools & Platforms: Docker, Nginx, Cloudflare, Git, MapReduce
- Core Competencies: Analytic Thinking, Problem Solving, Technical Communication, Technology Awareness

Professional Experience

Teaching Assistant – UC Santa Cruz, Santa Cruz, CA
March 2025 – June 2025

- Supported instruction for undergraduate Computer Science courses, specializing in Python programming and distributed systems.
- Designed and graded quizzes, and provided targeted feedback to improve student outcomes.
- Helped restructure assessment weights and Canvas gradebook settings to improve grading accuracy and transparency.
- Mentored students in debugging, data analysis, and networking fundamentals.

Customer Service Specialist – Safe Harbor Marinas, Santa Cruz, CA
2019 – 2022

- Managed client operations, scheduling, and documentation in a high-pressure environment.
- Trained new staff in system usage and customer interaction, improving team efficiency.
- Strengthened organizational and problem-solving skills applicable to data-driven and technical workflows.

Research & Technical Projects

KVALD Project – Master's Research

- Designed Kalman Vision-based Automated Local Dimming system to reduce automotive glare.

- Built Python prototype integrating CNNs with Kalman filters to generate real-time brightness masks; transitioning to a full C++ implementation.
- Experimented with synthetic datasets and integrated external sources (BDD100K) for training.

Distributed Systems Development
- Implemented a MapReduce system in Go for parallelized data processing.
- Built a Chord DHT (Distributed Hash Table) with RPC-based node communication and routing.
- Explored consensus protocols (Paxos, TRB, NBAC) for reliable distributed system coordination.

Machine Learning & AI Applications
- Developed RL agent in Carla simulator for autonomous navigation.
- Implemented EM, K-means clustering, PCA noise reduction, and SVM classifiers.
- Designed experiments with synthetic + real datasets to evaluate model performance.

BardBot – Discord Automation Project
- Developed a Discord bot that records weekly 3-hour D&D sessions, uploads audio to Azure Blob Storage, and transcribes speech using Azure Cognitive Services.
- Designed a modular pipeline integrating multiple APIs (Discord, Azure Speech-to-Text, third-party transcription services) to automate transcription and archiving.
- Implemented error handling, queue management, and storage lifecycle policies to ensure reliable and cost-efficient operation.
- Strengthened skills in asynchronous programming, cloud service integration, and end-to-end data workflows.

Portfolio Website Deployment – Full-Stack Project
- Built and deployed a personal portfolio website using Next.js and Tailwind CSS to showcase technical projects.
- Configured Nginx reverse proxy with Cloudflare origin certificates to enable secure HTTPS connections.
- Containerized the application with Docker and deployed using a CI/CD pipeline for reproducible builds.
- Gained hands-on experience with web infrastructure, DNS configuration, and production deployment workflows.

Education
M.S. Computer Science (In Progress) – UC Santa Cruz, Expected January 2026
B.S. Computer Science – UC Santa Cruz, 2024
Relevant coursework: Distributed Systems, Computer Networks, Advanced Computer Networks (with Lab), Network Security, Computer Systems/Assembly Language, Computer Architecture, Principles of Computer System Design, Advanced Cloud Computing, Machine Learning, Artificial Intelligence, Computational Models, Game Theory in CSE, Probability & Statistics, Applied Discrete Mathematics, Linear Algebra, Vector Calculus