

AIDEN CHANG

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Interests: Multimodal LLMs, Intelligent Embodied Agents, Responsible AI, Robotics, Autonomous Agents

EDUCATION

University of Southern California <i>Master of Science in Computer Science (AI Specialization)</i>	GPA: 3.94/4.0	Los Angeles, CA Aug 2023 - Aug 2025
Carleton College <i>Bachelor of Arts in Computer Science</i>		Northfield, MN Aug 2019 - Jun 2023

PROFESSIONAL EXPERIENCE

AI/ML Engineer Fellow - U.S. Army DEVCOM Army Research Laboratory Aug 2024 - Present

- Working on projects involving Robotics, Large Language Models (LLMs), and 3D Computer Vision, focusing on applications in Army robotics, autonomous agents, and human-robot interaction for search-and-rescue missions.
- Developing semantic segmentation pipelines using SAM2 and YOLO models to boost object detection performance, targeting applications in Army **robotics, autonomous agents**, and human-robot interaction for search-and-rescue missions.
- Implementing **Large Language Models** for reasoning in complex environments, automating scene understanding and decision-making processes in real-time, with a focus on enhancing situational awareness and **human-robot interaction for real users**.

AI/ML Visiting Student Researcher - Korea Advanced Institute of Science & Technology (KAIST) May 2024 - Aug 2024

- Researched on Responsible Multimodal Large Language Models (MLLMs) under the guidance of Prof. Steven Euijong Whang, focusing on **Fairness in AI** by analyzing biases and ensuring gender and skin tone equity in **T2I & I2T tasks**.
- Investigated **long-tailed biases** in MLLMs, assessing fairness across image qualities for protected attributes.
- Aiming to present findings at **AAAI's** workshop, contributing to fairness metrics and bias mitigation discussions.

AI/ML Engineer - Timonier Systems, LLC May 2023 - May 2024

- Utilized generative AI with **open-source LLMs** (Llama2, Mistral) and **advanced RAG** to identify and mitigate 92% of potential security threats, increasing data security and providing comprehensive security insights.
- Worked with a cross-functional team to achieve 40% improvement in in-domain responses by **fine-tuning open-source LLMs**.
- Developed an analytics platform leveraging Angular, Python, PostgreSQL, and a **vector database**, working with team members.

Software Engineer Intern, Charles Schwab Jun 2022 - Aug 2022

- Built a full-stack tool with **Kafka**, reducing main server loads by 13% and enabling direct, credential-free access to **GCP** statuses.
- Collaborated with team members to refactor Thinkorswim software from Bash to Python, boosting developer experience by 45%.

TECHNICAL PROJECTS

2D3MF - Deepfake Detection Using Multi-Modal Middle Fusion (In Progress for Submission to ICASSP)

- First author in creating 2D3MF, a PyTorch model employing transformer attention mechanisms to detect from audio-visual data whether a video is AI generated, showcasing **multi-modality in AI for deepfake detection**.
- Delivered state-of-the-art results in deepfake detection, achieving over 94% AUC on three major datasets.

ASSS - Advanced Satellite Surveillance System (Team leader, **Sponsored by US Space Force**)

- Led 60+ interviews** with military and industry experts; fielded open-source software for US Space Operations, enhancing space launch characterization. **Pitched product to 70+ investors** with strong interest.
- Fine-tuned YOLOv9 on open-source satellite imagery to detect small objects with a 0.48 Intersection Over Union (IOU), a 20% improvement over previous models, enhancing resolution and accuracy of surveillance data.
- Enhanced satellite imagery analysis by 40% by integrating advanced analytics and **embedding space comparisons**; coordinated cross-functional efforts to develop a real-time alert system for notifying U.S. Space Force of critical events.

LEADERSHIP & EXTRA CURRICULAR ACTIVITIES

Carleton College Varsity Football Team

- Starting Running Back, Most All-Purpose Yards Leader, and a **two-time Academic All-Conference Athlete**.
- Recognized by the National Football Foundation & College Hall of Fame for **academic excellence** among football players.

President of the Korean Student Association

- Executed strategic initiatives, analyzing 300+ responses to boost club growth and engagement.
- Increased membership by 60%, raised \$2,000 through cultural events; collaborated with clubs to boost attendance by 40%.

Northstar Freestyle Ski Team

- Previously was **ranked 47th in the nation** for Freestyle Skiing, sponsored by the North Face.

TECHNICAL SKILLS

Programming Languages: Python, C, SQL, Typescript, JS, HTML, CSS, R

Frameworks / Tools: Generative AI, LLMs, Git, HPC, Linux, AWS, Agile Software Development, React, Azure, GraphQL, REST

Libraries: PyTorch, Huggingface, Langchain, LlamaIndex, NumPy, Pandas, Matplotlib, ChatGPT, TensorFlow, Jupyter