Alex Huang

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Education

University of Wisconsin-Madison Madison, WI

B.Sc. (Hons) in Computer Science; GPA: 3.98/4.0 *Aug. 2020 – Dec. 2024*

Experience

Python Developer March. 2023 – Sep. 2023

Niedenthal Emotions Lab *Madison, WI*

- Leveraged drone footage and object detection models to track marching band members during practice.
- Designed algorithm to quantify synchronization of marching band members by analyzing movements over time.
- Created COCO dataset using Labelbox; increased annotation throughput by **5x** with model-assisted labeling.
- Built a Faster-RCNN model with the Detectron2 framework to accurately locate **286** band members **(66 mAP)**.

Engineering Intern July. 2022 – Sep. 2022

Zebra Technologies Corporation *Taipei, Taiwan*

- Developed an Android application that is used in testing the touch screens of Zebra Touch Computer Series.
- Automated screen failure detection by triggering notifications on ghost touches, eliminating need for manual monitoring and increasing labor efficiency.
- Worked collaboratively with the Electrical Engineering team to improve the UI design of the app.

Research Assistant Jan. 2023 – Present

Video Lab; Advisor: Prof. Yin Li *Madison, WI*

- Analyzed facial expressions in real-world videos to identify patterns for improved emotion classification.
- Modeled facial expressions with 3D Face Reconstruction models and clustered emotions with Generative models.
- Streamlined the video feature extraction pipeline by building a repository that can extract video features with mainstream models such as I3D, SlowFast, EgoVLP, CLIP, etc.
- Customized an iterable dataset to reduce memory usage; distributed workload across subprocesses to enhance video decoding efficiency. This results in a **20%** reduction in running time and a **70%** reduction in memory usage.

Research Assistant Jan. 2023 – Present

Knowledge and Concepts Lab *Madison, WI*

- Explored cognitive science with a focus of developing vision models that make human-like judgements.
- Demonstrated that models trained with semantic labels exhibit stronger alignment with human judgments compared to those trained with traditional methods.
- Built a Python pipeline that streamlined the interactions with Large Language Models such as GPT and FLAN.
- Paper written on top of this project was accepted to *EMNLP 2023*.

Teaching Assistant Sep. 2022 – May 2023

University of Wisconsin-Madison *Madison, WI*

- Selected as a teaching assistant for both *"Intro to Artificial Intelligence"* and *"Database Management Systems"*.
- Held more than **80 hours** of office hours and facilitated more than **200 students** on programming assignments.
- Covered concepts such as PCA, CNN, Probability, SQL, Query optimization, B+ Tree, and Data Storage.

Projects

Real-Time Sign Language Translation | *Python, PyTorch, Flask* Sep. 2022 - Dec. 2022

- Developed a Computer Vision application that recognizes American Sign Language characters at **97%** accuracy.
- Utilized Mediapipe API and ResNet18 for sign language classification to achieve strong real-time performance.

DevJob Searcher | *React Native* Jan. 2023 – April 2023

- Developed a mobile job search app with React Native, integrating J-Search API for convenient user experience.
- Developed custom hooks to dynamically retrieve updated developer job listings from platforms including LinkedIn, Indeed and Glassdoor.

Technical Skills

Languages: Python (PyTorch, OpenCV, pandas, NumPy, Matplotlib), Java, C/C++, SQL, JavaScript, HTML/CSS
Developer Tools: Git, Docker, Apache Spark, Hadoop, AWS, Google Cloud Platform, VS Code, Eclipse