Wei-Chun Huang

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University of Wisconsin-Madison   Sep. 2020 - Dec. 2024
B.S. in Computer Science and Data Science   Cumulative GPA: 3.98

Technical Skills: Python, Java, JavaScript, C++, HTML, CSS, PyTorch, wandb, Linux, GCP, Android Studio, AWS, MongoDB

Research Assistant   Advisor: Prof. Yin Li | Jan. 2023 – Present

- **Video Feature Extractor:**
  - Streamlined the video feature extraction pipeline for **video understanding** tasks by building a repository that can extract video features from various datasets with mainstream models such as I3D, SlowFast, EgoVLP, CLIP, etc.
  - Customized an iterable-style dataset to reduce memory usage, and 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.

- **Face in the Wild:**
  - Discovered facial expression patterns from in-the-wild videos with 3D face reconstruction models and unsupervised clustering methods.
  - Implemented the facial feature extraction pipeline and the benchmark on K-Means clustering and Gaussian Mixture Models.
  - Adapted Vector Quantised-Variational AutoEncoder for clustering and fine-tuned the model to achieve competitive performance.

Python Developer   Niedenthal Emotions Lab | April 2023 – Sep. 2023

- Utilized computer vision techniques to locate and track marching band members during practice.
- Analyzed the moving patterns of individuals and developed the algorithm to quantify synchrony within social groups.
- Built a COCO dataset from drone footage with **Labelbox** and optimized the annotation process with model-assisted labeling.
- Built a **Faster-RCNN** model with the **Detectron2** framework to accurately locate **286** band members (**66 mAP).**

Engineering Intern   Zebra Technologies | Jun. 2022 - Sep. 2022

- Developed an **Android application** that assists hardware engineers in testing the touch screens of the Zebra Touch Computer Series.
- Designed and implemented the ghost-touch-detecting feature and the path-replay feature, which help to increase labor efficiency.
- Worked collaboratively with the Electrical Engineering team to iteratively improve the UI design and functionality of the application.

Individual Projects

- **Real-Time Sign Language Translation:**   PyTorch | Flask | CSS | HTML
  - Developed a Computer Vision Web application that recognizes American Sign Language characters at 97% accuracy.
  - Utilized **Mediapipe API** for hand landmark detection and **ResNet18** for sign language classification to achieve good real-time performance.

- **Dev Job Search:**   React Native
  - Developed a **mobile application** that provides users with a convenient tool for job search with **React Native** and **J-Search API**.
  - Created custom hooks to dynamically fetch updated developer job posts from various platforms such as LinkedIn, Indeed, Glassdoor, etc.

- **AI Image Generator**   AWS | React | MongoDB
  - Developed a **MERN** application that utilizes OpenAI's **DALL-E API** to generate customized images based on user input.
  - Host the images on **Cloudinary** for efficient storage and deployed the application with **AWS**.

Teaching Experience

- Selected as a teaching assistant for both "CS540: Intro to Artificial Intelligence" and "CS564: Database Management Systems".
- Held more than **80 hours** of office hours and facilitated more than **200 students** on programming assignments and understanding new concepts.
- Covered concepts such as PCA, CNN, Statistics, Clustering, SQL, Query optimization, B+ Tree, Data Storage, and Buffer Management