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, Linux, GCP, Android Studio, AWS, MongoDB

Python Developer

Niedenthal Emotions Lab | **Computer Vision** | April 2023 – Present

- **Synchrony Measurement with Drone Footage:**
  - Quantified the degree of synchrony within social groups with **Object Detection** models and investigated its relationship with social connection.
  - Built a COCO dataset from drone footage with **Label box** and optimized the annotation process with model-assisted labeling.
  - Built a **Faster-RCNN** model with the **Detectron2** framework to accurately generate bounding boxes around **286** band members. Customized a COCO Evaluator to evaluate detection results on dense objects (**66 mAP).**

Undergraduate Research Assistant

Advisor: Prof. Yin Li | **Computer Vision** | Jan. 2023 – Present

- **Generalized Video Feature Extractor:**
  - Streamlined the video feature extraction pipeline for **Video Understanding** tasks by building a repository that can be used to 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.

- **Facial Expression 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.

Undergraduate Research Assistant

Advisor: Prof. Timothy Rogers | **Cognitive Science** | Jan. 2023 – Present

- **Vision Robustness with Semantic Vectors:**
  - Explored representation learning with a focus of developing models that make human-like judgements.
  - Analyzed the individual differences between model layers and evaluated human alignment with Procrustes analysis.

- **Model Response:**
  - Built a Python pipeline that streamlined the interactions with various **Large Language Models** for Cognitive Science researchers.
  - Paper ***"Conceptual structure coheres in human cognition but not in large language models"*** was submitted to EMNLP 2023

Engineering Intern

Zebra Technologies | **Mobile Development** | Jun. 2022 - Sep. 2022

- **Ghost Touch Detector:**
  - 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