Jong Hoon Park

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EDUCATION

Carnegie Mellon University (CMU) Pittsburgh, PA
Master of Science in Mechanical Engineering – Research | GPA: 3.89/4.0 May 2024
Coursework: Big Data Science, Visual Learning & Recognition, Deep Learning, On-Device Machine Learning

University of California, Davis Davis, CA
Bachelor of Science, Aerospace Engineering and Mechanical Engineering Dec 2019

SKILLS

Languages & Frameworks: Python, C++, CUDA, Git, Linux, AWS, GCP
AI Tools: PyTorch, Scikit-learn, OpenCV, LangChain, Hugging Face

WORK EXPERIENCE

Graduate Research Assistant, Carnegie Mellon University | Pittsburgh, PA May 2023 – Present
VTOL Pilot Mental Workload Estimation via Multimodal Machine Learning

- Worked on an industry-funded project for estimating pilot mental workload via multimodal machine learning.
- Conducted user studies, collecting physiological (e.g., heart rate, skin conductance) and self-reported measures from 28 certified pilots.
- Utilized eye tracking devices and applied computer vision methods to extract semantic data from eye gaze.
- Employed parallel computing with an end-to-end cloud platform to accelerate feature processing by 30 times.

Engineering Consultant, Celerity Consulting Group | Walnut Creek, CA Feb 2020 – May 2022
Transmission Line Upgrade Analysis & Mapping Support

- Piloted a new project assessing integrity of electric transmission lines and recommended repairs to clients.
- Mentored new hires by providing feedback and identifying areas for improvement.

ACADEMIC PROJECTS

LLM-powered Q&A Chatbot with Reduced Hallucination | *PyTorch, LLMs* Jan 2024 – Present

- Constructed an LLM-powered Q&A chatbot utilizing prompt engineering and vector search.
- Employed Retrieval-Augmented Generation (RAG) to retrieve answers from documents to address hallucination.
- Developed a webapp using Streamlit to facilitate document uploads and Q&A interactions related to documents.

Cockpit View Semantic Segmentation | *PyTorch, ML, Computer Vision* Nov 2023 – Dec 2023

- Fine-tuned a pretrained Mask R-CNN to extend its domain for segmenting real-world cockpit views.
- Created a custom dataset of cockpit view images from four types of airplanes using a flight simulator.
- Enhanced model generalization by augmenting images with custom weather and lighting variations.

Generative AI Model Compression on Device | *PyTorch, ML, Model Compression* Sept 2023 – Dec 2023

- Deployed and compressed a 73 million-parameter image generation model into an NVIDIA Jetson Nano.
- Implemented knowledge distillation, reducing model size by 58% with minimal performance drop.
- Enhanced inference speed on device by 94% on GPU via post-training static quantization to float16 domain.
- Developed a filter-wise structured pruning method and identified sensitive convolution kernels within encoders.

Vehicle Image Classification | *PyTorch, ML, Computer Vision* Apr 2023

- Fine-tuned a pre-trained ResNet model with 7,500 driving scene images.
- Implemented end-to-end learning with vehicle image cropping and feature extraction techniques.

Human Facial Emotion Recognition | *PyTorch, ML, Computer Vision* Oct 2022 – Dec 2022

- Built and trained a convolution neural network (CNN) for emotion prediction using 291,000 face images, achieving 70% prediction accuracy.
- Implemented and demonstrated real-time inference for human face detection and emotion recognition.

LEADERSHIP

LLM (Large Language Model) Project Team Lead, Course 24-782, CMU, Pittsburgh, PA Jan 2024 - Present
Team Lead, Celerity Consulting Group, Walnut Creek, CA Aug 2020
Advanced Modeling Aeronautics Team Section Lead, UC Davis, CA Feb 2018 – June 2018
Artillery Gun Section Squad Leader, Republic of Korea Army, Paju, South Korea Sep 2016 – Jul 2017