Zhiheng Jiang

310-709-5870 zhjiang@ucla.edu linkedin.com/jiangzhiheng github.com/jzh001

Education

University of California, Los Angeles
Bachelor of Science in Computer Science and Engineering (GPA: 4.00 / 4.00) *Los Angeles, CA*

- **Academics:** Intro to CS (C++), Single and Multivariable Calculus, Mechanics | Dean's Honors List (Fall 2024)
- **Activities:** IEEE Pocket Racers (Computer Vision and Robotics), ACM AI (Reinforcement Learning)

Experience

Structures-Computer Interaction Lab at UCLA Oct 2024 – Present
Undergraduate Researcher *Los Angeles, CA*

- Working with Prof. M. Khalid Jawed on using Large Language Models for Robotics to develop digital twin simulation of springs
- Worked with collaborator from Amazon to develop multi-agent, multimodal LLM-robot agentic workflows with agentic memory
- Developed advanced physics simulations using numerical methods and trained Neural Ordinary Differential Equations
- Deployed real-time computer vision algorithms using OpenCV and ArUco marker detection to capture slinky position

Institute of High Performance Computing, A*STAR June 2020 – Feb 2022
Research Assistant *Singapore*

- 1st Author publication with Dr Hoai Nguyen Huynh from the Agency for Science, Technology and Research (A*STAR)
- Improved upon Louvain Community Detection algorithm for Social Network Analysis, to close to 100% consistency
- One of the top 27 projects to receive the Gold Award at the prestigious Singapore Science and Engineering Fair

School of Physical and Mathematical Sciences, Nanyang Technological University June 2018 – Jan 2019
Research Assistant *Singapore*

- Conducted Natural Language Processing research with Assoc Prof Cheong Siew Ann
- Analyzed sentence structures using Part-Of-Speech tagging, Sentiment Analysis and directed graphs
- Presented paper at Singapore Youth Science Conference (Distinction) and International Science Youth Forum

Publications

[1] **Zhiheng Jiang** and Hoai Nguyen Huynh, "Unveiling music genre structure through common-interest communities" *Social Network Analysis and Mining*, Vol. 12, No. 35 (2022).

Projects

Today I Learnt AI Competition –Advanced Category Champion | *LLMs*, *VLMs*, *Finetuning*, *PyTorch*, *HuggingFace*, *VertexAI*, *Docker*

- Clinched team champion with 10,000 SGD (7,500 USD) cash prize amongst 60 university-level finalist teams
- Finetuned large deep learning models with high test scores, for audio (99.5%), Vision-Language Models and object detection (86.3%) and Transformer Question Answering (99.9%), with quantization, to achieve high inference speeds to deploy on a robot
- Finetuned SOTA models such as YOLO, DETR, RoBERTa and OpenAI Whisper on VertexAI and Google Cloud Platform
- Prize presented by Senior Minister of State for Defence of Singapore, Heng Chee How

International Mathematical Modelling Challenge – Top 2 Internationally | *Scikit-Learn*, *NetworkX*, *Genetic Algorithms*

- Determined the Greatest of All Time in individual and team sports, using mathematical modelling
- Featured during the 14th international Congress on Mathematical Education in Shanghai, China

AI Capture the Flag | *Adversarial Image*, *Model Inversion*, *Prompt Injection*, *Model Fingerprinting*

- Participated in a Jeopardy style Capture the Flag to collect flags by overcoming AI model security challenges
- Emerged 42nd out of almost 400 university-level teams, solving 7 challenges over 48 hours

Cerebral Beach Hacks (LA Tech Week 2024) | *Next.js*, *FastAPI*, *Claude LLM*, *Git*

- Built full-stack web app EV.AI from scratch in 24 hours under Most Fundable Startup Track in the GenAI Hackathon
- Used LLM Agents to simulate customers in a new market, and provide customized feedback to businesses

ACM AI - Atari Reinforcement Learning Project | *Reinforcement Learning*, *OpenAI Gym*, *PyTorch*, *SSH - In Progress*

- Developing Deep Reinforcement Learning algorithms using REINFORCE and Deep Q-Networks (DQN) to play Atari game
- Experimented with CNN and MLP-based RL function approximators to play Atari and Lunar Lander on OpenAI Gym

IEEE Pocket Racers (Autonomous Driving) | *Computer Vision*, *PyTorch*, *Raspberry Pi*, *Soldering - In Progress*

- Using Convolutional Neural Networks to enable autonomous driving on a self-built Raspberry Pi and PCB car
- Performed noise reduction methods using image kernels and Gaussian blurring for blob detection using OpenCV
- Soldered PCB board with sensors and circuitry such as Hall Effect Encoders, ESCs, Voltage Regulators and DC motors

Technical Skills

Languages: Python, C++, MATLAB, Java, Javascript, LaTeX
Technologies: PyTorch, Tensorflow, HuggingFace, LangGraph, LangChain, Scikit-Learn, Pandas, Numpy, React.js, FastAPI
Concepts: Large Language Models, Generative AI, Machine Learning, Computer Vision, Natural Language Processing