Zhiheng Jiang

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Education

University of California, Los Angeles

Bachelor of Science in Computer Science and Engineering <div align="right">*Los Angeles, CA*</div>

- **Relevant Coursework:** Intro to CS I
- **Activities:** IEEE Pocket Racers (Computer Vision and Robotics for Autonomous Driving)

Experience

Structures-Computer Interaction Lab at UCLA <div align="right">Oct 2024 – Present</div>

Undergraduate Researcher <div align="right">*Los Angeles, CA*</div>

- Working under Prof. M. Khalid Jawed to investigate using LLMs for Robotics to simulate properties of springs
- Initiated and developed software to integrate robot with Anthropic LLM Agents using LangGraph and Tool Calling
- Developed advanced physics simulations and trained Neural Ordinary Differential Equations on robotic data
- Used Grounding DINO and Segment Anything Model for text-based image segmentation to enable robotic vision

Institute of High Performance Computing, A*STAR <div align="right">June 2020 – Feb 2022</div>

Research Assistant <div align="right">*Singapore*</div>

- Conducted research under 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
- 1st Author publication in Springer Social Network Analysis and Mining, Volume 12, Article 35
- 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 <div align="right">June 2018 – Jan 2019</div>

Research Assistant <div align="right">*Singapore*</div>

- Conducted Natural Language Processing research under Assoc Prof Cheong Siew Ann
- Used Part-of-Speech Tagging and Sentiment Analysis to construct agency networks of story characters
- Presented paper at Singapore Youth Science Conference (Distinction) and International Science Youth Forum
- Finalist at the Singapore Science and Engineering Fair

Projects

Today I Learnt AI Competition –Advanced Category Champion | *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 high inference speeds to deploy on a robot
- Prize presented by Senior Minister of State for Defence of Singapore, Heng Chee How

International Mathematical Modelling Challenge – Top 2 International | *Scikit-Learn, NetworkX, Genetic Algorithms*
- Determined the Greatest of All Time in individual and team sports, using mathematical modelling
- Conducted sensitivity analysis, model achieves 90+% consistency after randomly removing 10% of data
- 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

Shopee Code League – Top 15 | *Machine Translation, Order Brushing, Dynamic Programming*
- Over 2 weeks, solved data analytics, data science and algorithmic challenges designed by Shopee
- Emerged as the Top 15 teams in the Asia Pacific region, competing with university undergraduates

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

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, Machine Learning, Neural Networks, Computer Vision, Natural Language Processing