Jackson(Zijun) Gao

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Education

University of Illinois Urbana-Champaign 2024/1 – 2026/5(expected)
Bachelor of Science in Mathematics & Computer Science, GPA: 3.85/4 Urbana-Champaign, IL, USA
- Coursework: Natural Language Processing, Reinforcement Learning, Computer Vision, Machine Learning, Statistics

Beijing Jiaotong University 2021/9 – 2023/12
Bachelor of Engineering in Computer Science and Technology Beijing, China
- GPA: 89.3/100, Rank 5/132

Experience

University of California San Diego Undergraduate Researcher 2024/6 – 2025/3
SimWorld: A World Simulator for Scaling Photorealistic Multi-Agent Interactions
Accepted by CVPR 2025 Demo Track
- Led team on human motion generation through diffusion models, advised by Professor Lianhui Qin and Zhiting Hu
- Developed Python APIs that integrate LLM calls to dynamically control and customize city generation

Fengze Intelligent Equipment Software Engineer Intern 2022/1 – 2023/4
- Developed an Intelligent Bearing Information Exchange Platform, focusing on the development of the alert server. Implemented a program to receive and store bridge pressure data from clients in a structured file format
- Visualized the stored data according to users' requirements
- **Methods and Tools used:** C++, MFC, TCP/IP Communication Protocols, Data Storage and Classification

Projects

Text-to-Image Scalable Diffusion Models with Transformers 2024/12 – 2025/1
- Leveraged a pre-trained DistilBERT encoder and integrated it with Diffusion Transformers(DiT) in PyTorch, enabling efficient generation of high-quality text embeddings with enhanced processing speed and accuracy.
- Achieved a **73%** reduction in memory consumption by gradient checkpointing and pre-extracted Variational Autoencoder (VAE) image features, enhancing training speed to 0.32 iters/sec on a single A100 GPU
- Fine-tuned a text-to-image DiT model using a pre-trained class-conditional checkpoint by unfreezing Embedders and initializing adaLN modules with random weights
- Benchmarked on MS-COCO, the fine-tuned model achieved a competitive FID score of **15.49** with the LDM-KL-8-G model using just 200K training steps

Reproduce of Alpaca 7B 2024/7 – 2024/8
- Developed a Self-Instruct-based pipeline to generate a 52K-sample dataset with GPT-3.5-Turbo from 200 manually crafted instructions
- Implemented training and fine-tuning workflows leveraging Hugging Face's framework, utilizing Fully Sharded Data Parallel and mixed precision techniques to enhance efficiency and reduce GPU memory usage

Tai Chi Training Assistance WeChat Mini Program 2022/4 – 2023/5
- Led a three-person team for a year, earning a Beijing Municipal Innovation Project Award (**Top 300 out of 1,448 teams**)
- Created a Tai Chi training assistance app capable of recognizing users' Tai Chi movements and comparing them to standard motions
- Designed algorithms for Tai Chi motion detection and comparison using the MoveNet model for human pose estimation
- Collected relevant datasets and fine-tuned the MoveNet model to enable scoring of Tai Chi movements and pinpointing specific errors in user poses

Skills

Programming: Proficient in Python, Pytorch, Linux and C
- Capable of developing software projects using the above languages and tools

Science: Strong foundation in linear algebra, discrete mathematics, physics and calculus
- Ability to analyze theoretical models in real-world scenarios

Awards

Beijing Jiaotong University First-Class Scholarship for Academic Excellence
- Ranked in the top 3% among computer science students

Third Prize in the National College Mathematics Competition

Outstanding Student for every semester from 2021 to 2023

Beijing Municipal-Level Award in the Entrepreneurship and Innovation Competition for College Students