

ZHIHUA TIAN

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Languages: Mandarin (Native), English (CET-6)

EDUCATION

Nankai University, Advised by *Prof. Jianda Han* and *Prof. Weiguang Huo*, Tianjin, China

Sep 2023 - Present

M.S. in Operations Research and Cybernetics, expected June 2026

GPA: 88.99/100

Hangzhou Dianzi University, Hangzhou, China

Sep 2017 - Jun 2021

B.S. in Computer Science and Technology

GPA: 3.67/4

RESEARCH INTERESTS

AI4Healthcare, Computer Vision, Large Language Models

RESEARCH EXPERIENCE

Accurate Assessment of Parkinson's Gait Impairments using Smartphone Videos

Sep 2023 - Nov 2025

► Developed a patented, expert-level deep learning framework (AUC=0.87, F1=0.806) to predict Parkinson's severity from smartphone videos. This system successfully distinguishes subtle medication (on/off) effects (73.68% acc.) at a physician-level resolution and discovers novel digital biomarkers sensitive to disease progression.

Video-Based Detection of Freezing of Gait (FoG) in Parkinson's Disease

Jan 2025 - Oct 2025

► Proposed the IMU2SKE framework to accurately predict Freezing of Gait (FoG) from monocular videos. leveraged IMU-guided hierarchical contrastive learning to significantly enhance prediction accuracy from 79.5% to 83.2%.

Large Language Model Research & Development

Jul 2024 - Present

► **VLM Geometric Reasoning Enhancement:** Constructed a multimodal dataset of 3,000 image-text pairs to enhance Qwen2-VL-7B. Applied Supervised Fine-Tuning (SFT) to improve geometric proof analysis, achieving an **18% accuracy improvement**.

► **Operations Research LLM:** Distilled knowledge from Deepseek R1 into a 1.5B parameter model for operations research modeling. Through SFT, the model surpassed GPT-4 by **27% on NL4OPT** and **5% on MAMO EasyLP**.

► **LLM Inference Acceleration (CoT Compression):** Optimized financial reasoning chains using SFT with compressed CoT and GRPO. Successfully reduced token consumption to **1/8** of the original with only a **3% marginal drop** in accuracy.

INDUSTRY EXPERIENCE

Tianjin Andon Co., Ltd., *AI Research Intern*, Tianjin, China

Mar 2025 - May 2025

► Built a voice appointment agent and a dietary comment LLM (Base: Qwen2.5-VL-7B) to improve efficiency for medical staff.

Hangzhou Huawei Co., Ltd., *Algorithm Engineer*, Hangzhou, China

Mar 2023 - Jul 2023

► Developed a high-definition portrait generation system (Unreal Engine MetaHuman) and improved model accuracy using diffusion models (DDPM) for data generation.

Hangzhou Alltuu Co., Ltd., *Algorithm Engineer*, Hangzhou, China

Apr 2021 - Apr 2022

► Developed human body/face beauty model and algorithm, with several models and algorithms serving 2M+ photographers.

AWARDS

🏆 Alibaba Tianchi ModelScope-Sora Challenge (4/347, Top 2%)

Sep 2024

🏆 First Prize in Chinese Operations Research Society Competition (Top 3%)

Oct 2024

🎓 Nankai University Academic Competition Special Scholarship (Top 10%)

Nov 2024

🎓 Nankai University Second-class Gongneng Scholarship (Top 20%)

Nov 2024

🏆 Huawei Ascend AI Innovation Competition Bronze Award

Sep 2023

PUBLICATIONS & PATENTS

📄 Jianda Han#, **Zhihua Tian (co-first author)**#, Jialing Wu#, Kai Zhang, Shaohua Li, Fahd Baig, Peipei Liu, Ravi Vaidyanathan, Francesca Morgante, Weiguang Huo*. Deep learning-enabled accurate assessment of gait impairments in Parkinson's disease using smartphone videos. *npj Digital Medicine* (TOP Nature partner journal, IF=15.1, JCR Q1, Rank 1/188 in Health Care Sciences & Services, Rank 2/48 in Medical Informatics).

📄 **Zhihua Tian**, Yanwei Zhao, Jianda Han, Weiguang Huo*. IMU2SKE: Hierarchical Contrastive Learning-Empowered Video-Based Detection of Freezing of Gait in Parkinson's Disease. *IEEE International Conference on Cyborg and Bionic Systems*.

🌟 Weiguang Huo, Peipei Liu, Jialing Wu, Jianda Han, **Zhihua Tian (first student author)**. Monocular Video-based Abnormal Gait Assessment Method and System. *China Invention Patent*, 202511317738.5.

SKILLS

► **Programming Skills:** Pytorch, ONNX, Docker, Git, Linux, Python, C/C++, CUDA