

# RESUME

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## EDUCATION

Nanyang Technological University, Singapore

Aug 2022 – Jun 2026

Bachelor of Computing in Computer Science, College of Computing and Data Science

Honours with a specialization in Data Science

## PUBLICATIONS

Name in bold denotes the author.

- **Jiahua Zhang**, et al. *Process Reward Model as Cross-Task Learner: An Extension of Vision-Language Model to Zero-Shot Medical Reasoning*. Proceedings of the 34th ACM International Conference on Multimedia (**ACM MM**), 2026.
- **Jiahua Zhang**, J. Liang, Y. Cai, J. Ni, J. He. *Can LLM Understand Medical Imaging with Long Context?* Proceedings of the IEEE International Conference on Multimedia and Expo (**ICME**), 2026. **Oral**.
- **Jiahua Zhang**, Y. Tian. *DiffiT-HSFDA: Diffusion Based Source-Free Domain Adaptation for Histopathology*. Advanced Intelligent Computing Technology and Applications (**ICIC**), Springer, 2025. **Oral**. [DOI](#)
- C. Zhang, X. Wang, H. Zhang, **Jiahua Zhang**, et al. *LayerLog: Log Sequence Anomaly Detection Based on Hierarchical Semantics*. Applied Soft Computing (**ASOC**), 2023. Impact Factor 7.8, **JCR Q1**. [DOI](#)
- C. Zhang, X. Wang, **Jiahua Zhang**, et al. *VESC: A New Variational Autoencoder Based Model for Anomaly Detection*. International Journal of Machine Learning and Cybernetics (**IJMLC**), 2022. Impact Factor 2.9. [DOI](#)

## RESEARCH EXPERIENCE

Guangzhou Medical University — State Key Laboratory of Respiratory Disease

Feb 2024 – Present

Research Collaborator, Thoracic Surgery Department and Thoracic Oncology Group

- Collaborated with Professor He Jianxing's thoracic surgery team on a visual foundation model programme for lung-cancer diagnosis from histopathology and computed tomography.
- Investigated region-of-interest activation failure in weakly supervised segmentation of lung cancer histopathology under cross-domain transfer with varying staining protocols, and designed a diffusion based source free domain adaptation pipeline that restored high accuracy segmentation without source data or additional annotation.
- Developed training-free multimodal large language model frameworks for computed tomography and whole-slide image analysis, adapting long-context models to high-dimensional medical imaging without task-specific fine-tuning.
- **Achievements:** one oral paper at ICIC 2025 and one oral paper at IEEE ICME 2026.

Nanyang Technological University — CAO Exchange Programme, Shenzhen

Nov 2025 – Feb 2026

Research Intern — BioMedPRM: Process Reward Modelling for Biomedical Reasoning

- Investigated step-level reward modelling to improve the reliability of large language model reasoning chains in biomedical question answering, supervising each reasoning step rather than only the final answer.
- Designed and evaluated a process reward model that transfers across tasks, with emphasis on robustness under distribution shift and in out-of-distribution clinical scenarios.
- **Achievements:** one paper accepted at ACM Multimedia 2026.

Nanyang Technological University — School of Social Sciences (Psychology)

Oct 2024 – May 2025

Research Assistant, supervised by Assistant Professor Luo Lizhu

- Represented high dimensional biomedical data, including functional MRI and whole slide images, as graphs so that language models can reason over inputs carrying far more variables than a context window admits.
- Developed a training-free graph in-context learning method for medical multimodal prediction and benchmarked it against fine-tuned baselines.

Pohang University of Science and Technology (POSTECH) — DPNM Laboratory

Jun 2024 – Aug 2024

POSTECH Summer Program (PSP), supervised by Professor James Won-Ki Hong

- Designed a convolutional diffusion-denoising pipeline for MRI and X-ray segmentation and spinal disease classification, improving performance on the BUU and lumbar-spine MRI datasets.
- Applied representation learning and natural language processing to hospital chief-complaint records, evaluating clustering and vectorisation methods including TF-IDF, and developed lightweight algorithms for edge-computing.

Nanyang Technological University — S-Lab for Advanced Intelligence

Mar 2024 – Jun 2024

Student Research Assistant, LLM-based video generation

- Improved the visual quality of AI-generated video by developing and applying noise-detection algorithms.
- Built label preprocessing for the performance evaluation benchmark used to assess generated video quality.

Harbin Institute of Technology, Shenzhen

Jan 2022 – Jul 2022

Research Assistant

- Carried out the data-processing component of two anomaly-detection studies, covering cleaning, preprocessing and preparation of large-scale log and time-series datasets for model training and evaluation.
- Produced the results visualisation for both studies, including the comparative and ablation figures reported in the published analyses.
- **Achievements:** co-authored two journal papers.

## ENGINEERING AND INDUSTRY EXPERIENCE

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### Open-Source Speech Synthesis Toolkit and Hosted Inference Service

2022 – 2023

*Independent developer*

- Trained speech-synthesis models and released a repository integrating VITS speech-synthesis APIs with large language models, adopted by content creators for video production and livestreaming. [Repository](#)
- Deployed and maintained a public inference platform on Hugging Face containers, self-funding GPU serving and optimising latency, cost and concurrent load. [Demo](#)

### Clangorous Technological Company — Intern, Full-Stack Developer

Dec 2023 – Feb 2024

- Contributed to development and testing of .NET, MVC and ERP modules across the full stack.
- Built and released a full-stack application project. [Repository](#)

## TECHNICAL SKILLS AND COMPETENCIES

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- **Machine learning:** PyTorch, Hugging Face Transformers, PyTorch Geometric, torchvision, torchaudio; large-model training and serving on multi-GPU cluster infrastructure.
- **Medical and multimodal AI:** medical image analysis (CT, MRI, X-ray, whole-slide imaging, functional MRI), vision-language models, process reward modelling, domain adaptation and transfer learning, test-time computation.
- **Software and web development:** Python, C# and .NET, ABP, Flask, Jinja2, Vue, React, MySQL, Android, Unity.
- **Data engineering:** data acquisition and web scraping, preprocessing pipelines for large-scale clinical and imaging data.
- **Languages:** Mandarin Chinese (native), English (IELTS 7.0).

## VOLUNTEER AND COMMUNITY ENGAGEMENT

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### NTU Chinese Society — Committee Member, Spring Festival Gala

2025

- Volunteered the 2025 NTU Spring Festival Gala, the society's largest annual stage production, presenting the full programme to a student and community audience.

### NTU Chinese Society — Committee Member, Publicity Team

2023 – 2024

- Served as event manager within the publicity team, writing and typesetting articles for the society's WeChat official account to promote society events throughout the academic year.

### NTU IET Club (Institution of Engineering and Technology) — Event Manager

Aug 2022 – May 2023

- Led the organisation of IT-oriented events and technical competitions for club members and the wider NTU student body, coordinating a committee of 5 members across 3 events and taking responsibility for planning, publicity and delivery.

### Shenzhen International High School Students Forum — Student Volunteer

2019

- Supported visiting delegates from different school systems in preparing and presenting their work, and assisted with on-site coordination of the forum.