Cheng Wan

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Education

Cornell University — Ithaca & New York, NY
Ph.D. in Electrical and Computer Engineering — *Aug. 2024 – May 2028 (expected)*

Georgia Institute of Technology — Atlanta, GA
Master in Electrical and Computer Engineering (GPA: 4.0/4.0) — *Aug. 2022 – May 2024*

Nanchang Hangkong University — Nanchang, China
Bachelor in Communication Engineering (GPA: 3.5/4.0) — *Sep. 2018 – Jun. 2022*

Research Interests

– Multimodal foundation models (LLMs/VLMs): instruction tuning, reinforcement learning (RLHF/PPO/DPO/GRPO), visual reasoning
– Generative AI: diffusion models, text-to-image/video/3D generation, controllable synthesis
– Efficient ML systems: quantization, model compression, distributed training, scalable deployment

Selected Publications

Full paper list: Google Scholar

– PRISM-Bench: A Benchmark of Puzzle-Based Visual Tasks with CoT Error Detection
Yusu Qian*, **Cheng Wan***, Chao Jia, Yinfei Yang, Qingyu Zhao, Zhe Gan
[Arxiv]

– WASABI: A Metric for Evaluating Morphometric Plausibility of Synthetic Brain MRIs
Bahram Jafrasteh*, Wei Peng*, **Cheng Wan**, Yimin Luo, Ehsan Adeli, Qingyu Zhao
[MICCAI 2025]

– Swift Parameter-free Attention Network for Efficient Super-Resolution – *65 citations, 200+ stars*
Cheng Wan*, Hongyuan Yu*, Zhiqi Li*, Yihang Chen, Yajun Zou, Yuqing Liu, Xuanwu Yin, Kunlong Zuo
Winner Award & Oral @ NTIRE – [CVPR-W 2024]

– Advancing Sleep Disorder Diagnostics: A Transformer-based EEG Model for Sleep Stage Classification and OSA Prediction
Cheng Wan, Micky C. Nnamdi, Wenqi Shi, Benjamin Smith, Chad Purnell, May Dongmei Wang
[IEEE J-BHI 2024]

– A Multi-scenario Attention-based Generative Model for Personalized Blood Pressure Time Series Forecasting
Cheng Wan, Chenjie Xie, Longfei Liu, Dan Wu, Ye Li
[ICASSP 2024]

Research Experience

Cornell University — Weill Cornell Medicine & Cornell Tech — New York, NY
*Ph.D. Student (Advisors: **Mert R. Sabuncu**; **Qingyu Zhao**)* — *Aug. 2024 – Present*

- Longitudinal 3D brain MRI progression modeling using latent diffusion model with anatomical guidance; work submitted to IEEE Transactions on Medical Imaging (TMI).
- Collaborating with industry collaborators, we built a puzzle-based visual reasoning benchmark with step-level error detection and VQA task for evaluating reasoning ability of MLLMs; work submitted to ICLR 2026.

Bio-MIBLab, Georgia Tech — Atlanta, GA
Research Assistant (Advisor: May D. Wang) — *Jan. 2024 – Jun. 2024*

- Transformer-based EEG pipeline for sleep staging and OSA risk; first author published at IEEE J-BHI 2024.
- Developed a knowledge-informed OSA diagnosis model from single-channel oximetry that learns clinically interpretable concepts and integrates patient data, enabling more accurate and transparent predictions; accepted to ACM BCB 2025.

Xu Lab, Carnegie Mellon University — Pittsburgh, PA
Research Intern (Advisor: Min Xu) — *May 2023 – Aug. 2023*

- Fast image super-resolution with strong restoration–efficiency tradeoff; contributed to ICCV 2023 VOTS robustness track (team top-3).

SIAT, Chinese Academy of Sciences Shenzhen, China
Research Intern (Mentors: Dan Wu; Ye Li) *Nov. 2021 – Jul. 2022*

- Cuff-less blood pressure modeling via ECG/PPG/ICG; multi-scenario forecasting pipeline; publications in ICASSP/EMBC.

Technical Skills

Languages: Python, C/C++, CUDA, SQL.
ML Frameworks: PyTorch, TensorFlow, JAX; Hugging Face (transformers, trl, peft), vLLM, DeepSpeed.
LLMs & GenAI: RLHF (PPO/GRPO/DPO), LoRA/QLoRA, diffusion models (DDPM/LDM), prompt engineering.
Distributed Training: DDP/FSDP, ZeRO; mixed precision, gradient checkpointing; Slurm, Weights&Biases.
Systems & Deploy: Linux, Git, Docker/Apptainer; AWS/GCP/Azure; ONNX/TensorRT; model serving.

Teaching

Cornell University Ithaca, NY
Teaching Assistant (Co-lecturer) — ECE 5200/3200 : Foundations of Machine Learning *Spring 2025*

Competition Achievements

– CVPR 2025: NTIRE Efficient Super-Resolution (ESR)
2nd place
– CVPR 2024: NTIRE Efficient Super-Resolution (ESR)
1st place & Oral
– CVPR 2024: NTIRE Image Super-Resolution (x4)
1st place
– CVPR 2024: NTIRE Raw Image Super-Resolution (RawSR)
2nd place
– CVPR 2024: AI4Streaming Real-Time SR (RTSR)
3rd place
– ICCV 2023: Visual Object Tracking Segmentation (VOTS) Robustness Track
3rd place

Awards

– Cornell PhD Fellowship 2024 – 2025
– Merit Student Scholarship, Georgia Tech 2022 – 2023
– Outstanding Scholarship, NCHU (Top 1) 2021 – 2022
– Outstanding Scholarship, NCHU (Top 10) 2020 – 2021

Open Source & Projects

SPAN: Swift Parameter-free Attention Network for Efficient Super-Resolution | GitHub (200+ stars) 2024

- Open-source efficient super-resolution framework; models won multiple CVPR NTIRE challenge championships.

MCD-Net: RGB-D Video Inpainting | GitHub 2023

- First RGB-D video inpainting dataset with authentic data; achieved SOTA accuracy and runtime for joint inpainting.

Learning Chess from LLMs | GitHub 2022

- Probed language models' ability to track world state and reason about chess positions using chess notation.