

Xu Zhang

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EDUCATION

New York University

The Master in Computer Science : GPA: 3.83

The University of Texas at Austin

B.S. in Mathematics (with honor): GPA: 3.95

• 75th Annual Natural Sciences College Scholars (2023)

New York, NY

September 2024 – 2026

Austin, TX

January 2021 – May 2024

RESEARCH&INTERNSHIP EXPERIENCE

NYU Tandon AI4CE lab

Research Intern

New York, NY

July 2026 – Now

- Engineering a pipeline for outdoor G1 humanoid open-world navigation, optimizing robust obstacle avoidance and terrain adaptation on real hardware.
- Co-leading dataset curation and evaluation benchmarks for AR-based (Aria Gen 2) loco-manipulation tasks aimed at imitation learning and motion tracking.
- Integrated low-level rigid-body physics and custom robot assets into the SOTA navigation dataset Wanderland in IsaacSim to improve sim-to-real transfer fidelity.

Student Mentee

June 2025 – June 2026

- Co-designed a novel framework of evaluating VLM agent performance in understanding and planning in assembly tasks (CORL submission under review).
- Benchmark Scientific understanding of VLM agents in scientific application that requires fine-grained perception of video data.

Capgemini Automobile Manufacturer LLM-based Market Analysis Pipeline

Shanghai, China

AI Engineering Assistant (NLP)

June 2024 – August 2024

- Co-developed a FastAPI server for hosting fine-tuned LLMs to extract key insights from market opinion on car parts in the client's products.
- Led the experiments on evaluating how vLLM enhances models' performance (including Qwen, Chatglm, etc.) and manages multi-thread requests through experiments on the FastAPI server we developed.
- Discovered and verified the crucial observation that using vLLM will result in outputs different from original models given fixed parameters due to vLLM's different implementation of attention kernel.

Gene Expression Study in Binge-like Alcohol-Drinking Mice Across Brain Regions

Austin, TX

Research Assistant (Supervised by Professor Dhivya Arasappan)

February 2023–June 2024

- Conducted concordance and discordance analyses to identify genes with closely aligned expression levels across multiple brain regions.
- Executed pathway analysis to identify responsible pathways for differentially expressed concordant genes in multiple brain regions.

PUBLICATIONS & SUBMISSIONS

[CoRL 2027 (Under Review)] "*PosetEval: Evaluating Partial-Order Assembly Understanding from Multiple Videos.*" - A. Doshi, X. Zhang, C. Chen, Z. Yu, S. Li, J. Zhang, C. Feng

[In Prep] "*One-shot Outdoor Humanoid Open-World Navigation with Dynamic Obstacle Avoidance.*" - X. Zhang, S. Kim, M. Wang, R. Khorrambakht, J. Zhang, C. Feng

TECHNICAL PROJECTS

[GPT2 from scratch with 100% CUDA kernels](#) | C++, CUDA, GPU programming

- System Extension: Engineered an end-to-end GPT-2 inference pipeline from scratch with a generalized 4D CUDA tensor and all kernels implemented by CUDA.
- Kernel Engineering: Developed and optimized custom, advanced CUDA kernels required for transformer-based autoregressive inference, including layer normalization, multi-dimensional permutation, and softmax operators.
- Validation: Achieved mathematical equivalence in text-generation outputs when validated against PyTorch's standard framework, removing the "black box" of hidden deep learning framework abstractions.

[Self-Supervised View-Invariant Representation Learning](#) | Computer Vision, Self-Supervised Learning (SSL)

- Methodology Innovation: Designed a novel joint exo-ego self-supervised learning (SSL) framework tailored for hand-centric procedural videos, optimizing a combined reconstruction and view-invariant loss to filter out perspective-specific signals.
- Benchmark Evaluation: Applied the representation framework to the temporal action segmentation task on the Assembly101 dataset, outperforming baseline approaches across both egocentric and exocentric domains.

Other Projects: [CUDA hash map](#), [YOLOv6 with few-shot learning](#), [Reimplementation of MViT & Prototypical Network](#).

TECHNICAL SKILLS & COURSEWORK

Robotics & Simulators: MuJoCo, Isaac Sim / Isaac Gym, RL, SLAM, Physical Robot Deployment.

- Languages & Systems: Python, C/C++, CUDA, UNIX/Bash, High-Performance Computing (HPC/SLURM).
- ML & Vision Frameworks: PyTorch, Weights & Biases, Hugging Face, OpenCV.
- Mathematical Foundations: Real Analysis, Numerical Analysis, Linear Algebra, Probability & Statistics.

PRESENTATIONS & CONFERENCES

* "Cross-Brain-Region Gene Expression Profiling in Binge-Drinking Mice Models." - Heart of Texas Undergraduate Research Conference (2024).

* "Evaluating the Impact of Non-Nutritive Sweeteners on Enterobacter cloacae Pathways." - Undergraduate Research Forum (2022).

* Student Representative Panelist, UT Austin College of Natural Sciences "Year of AI" Donor Event (2024).

