Tang, Zijia (Thomas)

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Interest area: Artificial Intelligence, Robotics, AI4Science, Bioinformatics

EDUCATION

Duke University Aug. 2024 – Present
Computer Science Major GPA: 4.0 / 4.0
Relevant Coursework: Applied Machine Learning, Advanced Algorithms, Linear Algebra

SELECTED PUBLICATIONS

FLARE: A Failure-Aware Framework for Autonomous Correction and Recovery in VLA | Co-First Author | Submitted to CVPR 2026

- Addressed the "brittleness" of current VLA models where minor perturbations lead to catastrophic failure, aiming to endow robots with **human-like resilience**.
- Proposed a novel **Retry & Reset paradigm**. Designed a **Perturbation & Bridging augmentation pipeline** that systematically decouples robot pose from environment state to resolve In-Distribution (ID) errors.
- Integrated **Gemini-2.5-Pro** as an offline failure analyst to mine object-centric "Reset" skills for Out-of-Distribution (OOD) recovery. Implemented using LoRA fine-tuning on $\pi_{0.5}$ backbones.
- Achieved 84.0% success rate across 9 contact-rich tasks in RoboMimic, **outperforming SOTA by 26.2%**.

scDrugMap: Benchmarking Large Foundation Models for Drug Response Prediction | Co-Author | Published in Nature Communications **(Impact Factor: 15.7**)

- Benchmarked 10 **Foundation Models** using multiple fine-tuning strategies on 340,000+ cells.
- Validated that LoRA fine-tuning significantly boosts **cross-data generalization capabilities** in foundation models.

scPerb: Single-cell Perturbation via Style Transfer-based Variational Autoencoder | First Author | Published in Journal of Advanced Research **(Impact Factor: 11.79**)

- Designed **scPerb**, a novel deep learning framework that accurately **(99.5%, SOTA)** predicts single-cell responses to gene or drug perturbations by **style transfer** and **variational autoencoder (VAE)** architectures.
- Presented both a **5-minute oral talk** and a **poster presentation** at **MCBIOS 2025 Conference**, receiving positive feedback from domain experts for its innovation.

PINet: Privileged Information Improves the Interpretability and Generalization of Structural MRI in Alzheimer's Disease | First Author | Presented at ACM-BCB 2024

- Architected a hybrid **CNN-Transformer** model utilizing privileged information to detect early-stage Alzheimer's, achieving **96% accuracy**.
- Accepted as a **rapid-fire paper (top 25%)** by ACM-BCB conference.

PROJECTS

Lehome Challenge **| Deformable Object Manipulation | Team Lead, ICRA 2026 Workshop**

- Developing a **robust policy** for cloth folding within the LeHome HI-FI simulation environment.
- Tackling the "Sim-to-Real" gap for deformable objects (garments) by optimizing control strategies for resource-constrained, low-cost robotic hardware.

JokeGPT **| Python, Pytorch, Huggingface**

- Finetuned a specialized generative language model pipeline for humor synthesis, exploring **instruction tuning** and **RLHF** techniques.

Desktop Video for mac **| Python, Swift, SwiftUI**

- Developed a lightweight macOS dynamic wallpaper engine. Implemented resource-efficient rendering and sandboxed persistence.
- Achieved 15+ GitHub stars.

WORK AND RESEARCH EXPERIENCE

High school & Undergraduate Intern at Song Lab (Department of Health Outcomes & Biomedical Informatics at the University of Florida) May 2023 – Present
Paid Research Assistant at Yi Zhang's Lab (Department of Neurosurgery and Department of Biostatistics and Bioinformatics at Duke University) Aug 2024 – Present
Research Assistant (Robotics Focus) under the supervision of Guanbin Li at HCP lab at Sun Yat-Sen University May 2025 – Present
Active Journal Peer Reviewer (5 papers in 2024; 3 papers in 2025)