Yue Su

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Education

Xidian University — **Xi'An, China**
Undergraduate in School of Artificial Intelligence — *2022–2026(expected)*

- **GPA:** 3.6/4.0, **Rank:** 13/187, **Score:** 84.1/100
- **Core Courses:** Advanced Mathematics (94), Program Design (93), Circuit (96), Data Structure (98), Optimization Theory (90), Probability Theory(90), General Engineering (93), Numerical Methods (90).

Research Interests

My research interests and the deep learning paradigm I aim to shape primarily focus on the following aspects:

- **Reasoning-based Learning:** Inferring knowledge through interaction with the real world, such as deducing object motions, contacts, mechanical interactions, affordances, etc., from observations. By leveraging the ability to reason about the real world, robots or agents can acquire enhanced generalization capabilities, potentially leading to the development of active learning abilities in the future.
- **Generative Modeling:** The aim is to use generative methods to model objects governed by physical laws, including feature-level, semantic-level, and scene-level representations, with the ultimate goal of building a world model.

Research Experience

- **Machine Vision and Intelligence Group** — **Shanghai Jiao Tong University**
  Research Assistant advised by Prof. Cewu Lu, Prof. Lixin Yang — *July 2024 - Now*
  Pursuing research in robot learning with particular attention to perception and inference about the real world.
- **Key Laboratory of Cooperative Intelligent Systems** — **Xidian University**
  Research Assistant advised by Prof. Maoguo Gong, Prof. Hao Li — *September 2023 - July 2024*
  Contributed to research on adversarial attacks against computer vision systems.

Publications

- **Motion Before Action: Diffusing Object Motion as Manipulation Condition**
  Yue Su,[*] Xinyu Zhan[*], Hongjie Fang, Yong-Lu Li, Cewu Lu, Lixin Yang[†]
  Propose MBA, a novel module that employs two cascaded diffusion processes for robot action generation under object motion guidance. Designed as a plug-and-play component, MBA can be flexibly integrated into existing robotic manipulation policies with diffusion action heads.
  Paper available at arXiv.
- **Generative Adversarial Patches for Physical Attacks on Cross-Modal Pedestrian Re-Identification**
  Yue Su, Hao Li[†], Maoguo Gong[†]
  A generative adversarial attack on VI-ReID models perturbs modality-invariant features, creating patches that expose sota vulnerabilities and highlight the need for enhanced feature extraction.
  Paper available at arXiv.
- **AdvDisplay: Adversarial Display Assembled by Thermoelectric Cooler for Fooling Thermal Infrared Detectors**
  Hao Li[†], Fanggao Wan, **Yue Su,** Yue Wu, Mingyang Zhang, Maoguo Gong[†]
  Historically, infrared adversarial attacks were single-use and unflexible. Using TEC, we implemented attacks adaptable to various scenarios, causing pedestrian detection models to misjudge.
  Accepted at AAAI 2025.

Projects

- **U-pre: U-Net is an excellent learner for time series forecasting**
  Time series forecasting is a regression problem well-suited for U-Net's architecture due to its consistent input-output

distributions and strong mathematical alignment. U-Net1D outperformed transformer-based models in 2022 on some tasks, showcasing its surprising potential. Combining U-Net with Bert-Encoder improved performance by incorporating both local and global attention.
Code available at link.

- **FGSM3D: Is the point cloud gradient perturbation attack feasible?**
Existing adversarial attacks on point clouds are mainly based on physical generation rather than gradient perturbation. This project extended the FGSM attack to the 3D domain and achieved significant success within a certain gradient range. However, the 3D model sampling method presented challenges, suggesting that the problem is more complex than initially thought.
Code available at link.
- **AgentCrossTalk: Perform a Crosstalk between two LLM agents**
This project uses Google Gemini to create a simple chatbot application simulating a crosstalk dialogue between two performers based on user-provided topics. Future work will focus on audio style transfer and reducing inference time for a more interactive and efficient system.
Code available at link.

Awards

- **First Prize, Provincial Level, 2023 China Mathematical Contest in Modeling**
- **First Prize, Provincial Level, 2024 China Mathematical Contest in Modeling**
- **Second Prize, Northwestern, 2024 China Computer Design Contest**

Community Experience

- **Head of the Research Department of Microsoft Club, Xidian University.**