Yifei Chen

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Education

Xi'an University of Technology, China — Sept. 2023 – Jun. 2026 (Expected)
M.Sc. in Computer Science

Southwest Petroleum University, China — Sept. 2018 – Jun. 2022
B.Eng. in Computer Science

Research Summary

My research focuses on building **trustworthy, robust, and explainable** methods to drive scientific innovation. In particular, I explore out-of-distribution detection approaches that integrate **LLMs**, tackle **cross-domain** robustness and generalization challenges, and design **lightweight** architectures optimized for real-time deployment. I am currently engaged in research related to autonomous driving, and I am deeply interested in **robotics** and **computer vision**.

Publications

- Minghua Zhao*, **Yifei Chen**†, Jiahao Lyu, Shuangli Du, Zhiyong Lv, Lin Wang, SDAFE: A Dual-filter Stable Diffusion Data Augmentation Method for Facial Expression Recognition, *(ICASSP '25)*, Accepted
- Minghua Zhao*, **Yifei Chen**†*, Jiahao Lyu, Shuangli Du, Cheng Shi, Jing Hu, Hierarchical Semantics-Driven Multimodal Hyperbolic Unsupervised Video Anomaly Detection, *(AAAI '25)*, Accepted by phase 1, Under review
- **Yifei Chen**, Ross Greer, Technical Report for Argoverse2 Scenario Mining Challenges on Iterative Error Correction and Spatially-Aware Prompting, *Argoverse2 Scenario Mining Challenge 2nd (CVPR Workshop '25)*, Accepted
- **Yifei Chen**, Ross Greer†, Robust Scenario Mining Assisted by Multimodal Semantics, *(ICCV Workshop '25)*, Accepted
- **Yifei Chen**, Ross Greer†, SMc2f: Robust Scenario Mining for Robotic Autonomy from Coarse to Fine, *IEEE Robotics and Automation Letters(RA-L)*, Under Submission
- Jiahao Lyu, Minghua Zhao, Jing Hu, Xuewen Huang, **Yifei Chen**, Shuangli Du, VADMamba: Exploring State Space Models for Fast Video Anomaly Detection, *IEEE International Conference on Multimedia & Expo (ICME '25 Oral)*, Accepted
- Minghua Zhao, Yuxuan Lyu, Jiahao Lyu, **Yifei Chen**, Video Anomaly Detection Method Based on Multi-Scale Appearance-Motion Fusion, *China Multimedia Conference (China MM '25)*, Accepted
- Minghua Zhao, Xuewen Huang, Shuangli Du, Jiahao Lyu, **Yifei Chen**, Jing Hu, Cheng Shi, Zhiyong Lv, Multi-scale Attention Network with Forward Interval Frame Constraints for Video Anomaly Detection, *IET Image Processing Journal*, Under review

† *represents corresponding author.* ∗*represents these authors contributed equally to this work.*

Software copyright

- **Yifei Chen**, Vision Guided Autonomous Driving System, V1.0, Approved
- **Yifei Chen**, Graduation Project Management System, V1.0, Approved

Research Experience

Research on Autonomous Driving Scenario Mining, University of California, Merced, USA

Advisor: Prof. Ross Greer | Mi3 Lab | May. 2025 – present

- Proposed the enhanced spatial awareness scenario-mining method and a fault-tolerant generation mechanism.
- Proposed the Coarse to Fine Robust Scenario Mining Method.

Research on Video Anomaly Detection in Surveillance Video, Xi'an University of Technology, China

Advisor: Prof. Minghua Zhao | Smart Processing Laboratory for Multi-Source Imagery | Mar. 2024 – May. 2025

- Proposed the Hierarchical Semantics-Driven Multimodal Hyperbolic Unsupervised Video Anomaly Detection framework to explore unsupervised video anomaly detection in non-Euclidean space.
- Constructed the vector quantization module within VADMamba, enabling efficient model training and inference.
- Constructed the Normal Video with Hierarchical Annotations dataset and co-authored multiple research papers.

Research on Facial Expression Recognition under Complex Imaging Conditions, Xi'an University of Technology, China

Advisor: Prof. Minghua Zhao | Smart Processing Laboratory for Multi-Source Imagery | Jun. 2023 – Mar. 2024

- Proposed the Dual-filter Stable Diffusion Data Augmentation Method for facial expression recognition tasks, effectively mitigating category distribution imbalance.
- Designed the FERNeXt for facial expression recognition, achieving SOTA performance on the FER2013 dataset.

Awards

- First-Tier Graduate National Scholarship for Academic Excellence, 2025 (Top 2%)
- Second Place (USD 3000 Prize), Argoverse2 Scenario Mining Competition (CVPR 2025)
- Second Prize, the 6th National Graduate Artificial Intelligence Competition, China
- Second Prize, the 7th National Graduate Artificial Intelligence Competition, China

Presentation

- IEEE International Conference on Multimedia & Expo 2025, Nantes, France [Link]
- The 4th Conference on Intelligent Education, hosted by the China Computer Federation (CCF), Xi'an, China [Link]

Extracurricular Activities

- **Leadership:** Organized the "Graduate Tech Talk Series" at Xi'an University of Technology, inviting researchers from local universities and industry to share work on AI, robotics, and computer vision.
- **Digital Creativity & AI Applications:** Used generative AI and computer vision techniques to restore and colorize portraits of World War II veterans for a museum exhibition, improving public engagement with history.
- **Volunteering & Community Service:** Led a weekend coding workshop for underprivileged high school students in rural Shaanxi, helping them build their first Python projects.
- **Innovation Activities:** Co-developed a student project on smart campus navigation for visually impaired users, showcased at the university's Maker Fair.

Relevant advisors

- **Prof. Minghua Zhao**
  Professor & Chair, School of Computer Science, Xi'an University of Technology, China [Link]
- **Prof. Ross Greer**
  Assistant Professor, School of Electrical Engineering and Computer Science, University of California, Merced, USA [Link]

Additional Information

Languages: Mandarin (Native), English (Fluent)

Technical Skills: Python, C++, Java, SQL, Pytorch, TensorFlow, Spring Boot, Vue, Docker, Git

Interests: Cryptocurrency, Guitar, Travelling