Shijun Lei

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Research Interest: AI Scientists, Agent Society

Education

- **Northwestern Polytechnical University Ph.D. candidate Computer Science** *Aug 2025 – Present*
  Working on: AI Scientists, Agent Society, GUI Agent Xi'an, China
  Advised by Yunji Liang | Mentored by Zhenfei Yin
- **Harbin Engineering University B.S. Mathematics and Applied Mathematics** *Aug 2021 – Jul 2025*
  National-level awards in algorithm competitions by Huawei, Baidu, and Tencent. Harbin, China

Publications

C=Conference, J=Journal, S=In Submission

† Corresponding author

[S.2] Shijun Lei, Swapneel Mehta, Quang Nguyen, Zeping Li, Yunji Liang†, Zhenfei Yin†, Huichuan Fu, Xiaolong Zhen, Marshall Van Alstyne, Nina Mazar, Philip Torr. (2026). When AI Agents Collude in Truthmarket: Warranty Mechanisms Outperform Reputation Systems in Preventing Group-Level Deception.

[S.1] Shijun Lei, Hongyu Wang, Yunji Liang†, Haowen Zheng, Bin Guo, Zhiwen Yu. (2025). Truth or Tribe: How In-group Favoritism Prioritize Facts in Persona Agents.

Internship

- **CETC Cyberspace Research Institute** *Apr 2025 – Aug 2025*
  Institute of Social Computing, Frontier Technology Lab Beijing, China
  - Developed a mobile GUI agent, constructed personas for multiple virtual containers, and built a container-based simulation of social media platform interactions.
  - Developed rotation start/stop control scripts for Mogyun Android smart computing nodes across multiple virtual containers.

Projects

- **Tencent Kaiwu AI Global Open Competition – Agent Decision Algorithm** *Jul 2025 – Aug 2025*
  Tools: PPO, Docker
  - Designed feature processing pipelines and reward functions to improve the agent's win rate in Honor of Kings 1v1 competitive matches, with optimized hero movement paths and actions strategies.
- **Social Network Topic Propagation and Group Stance Evolution Assessment Based on OASIS** *Apr 2025 – Jun 2025*
  Tools: OASIS, CAMEL
  - Constructed large-scale datasets covering specified topics and user state configurations.
  - Designed OASIS social interaction actions and implemented social network simulation using the OASIS framework.
  - Analyzed group stance evolution from interaction data generated by agents within the simulation environment.
- **LLM Internet Language Style Transfer via LoRA Fine-Tuning** *Aug 2024 – Nov 2024*
  Tools: LoRA, Cherry-LLM
  - Preprocessed collected Traditional Chinese internet comment data.
  - Constructed a high-quality fine-tuning dataset using the Cherry-LLM data selection method.
  - Fine-tuned a 7B Traditional Chinese language model via LoRA to achieve internet-style language generation.
- **Baidu National University Student Intelligent Vehicle Competition** *Apr 2024 – Aug 2024*
  Tools: Object Detection, Path Planning
  - Trained object detection and localization models for real-time perception in the autonomous driving task.
  - Developed execution logic algorithms for complex scene tasks, handling multi-condition decision-making for the vehicle.
- **Efficient Ship Flow Field Prediction Based on Deep Learning** *Jun 2023 – Jun 2024*
  Tools: MLP, PCA, AutoEncoder
  - Obtained numerical solutions of ship flow field distributions by solving traditional Navier-Stokes equations.
  - Applied PCA and AutoEncoder for dimensionality reduction of flow field prediction data.
  - Built a deep learning model to learn the mapping from ship parameters to reduced-dimension flow field representations.

- **Gear Bearing Fault Diagnosis Based on Transfer Learning** *Mar 2022 – Aug 2022*
  Tools: TCA, JDA, MEDA
  - Applied FFT to perform time-frequency transformation on six-axis gear bearing vibration sensor data.
  - Conducted transfer learning generalization experiments across source and target domains using TCA, JDA, and MEDA.

Skills

- **Programming Languages:** Python, C++, C#, Matlab
- **DevOps & Version Control:** Git, Docker, Linux

Honors and Awards

- **Tencent Kaiwu AI Competition**, 1st Prize, Northeast Regional Competition *2025*
- **Huawei Software Elite Challenge**, 2nd Prize (Top 32), Beijing-Tianjin-Northeast Region *2024, 2025*
- **Baidu National University Student Intelligent Vehicle Competition**, National 2nd Prize *2024*
- **National University Student Mathematical Modeling Competition**, Provincial 2nd Prize *2023, 2024*