

# JIANG, Panfeng

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## EDUCATION

<b>ShanghaiTech University (ShanghaiTech)</b>	Sep 2022 – Present
• Bachelor of Engineering in Computer Science	GPA: 3.81/4.0
• Minor in Mathematics & Applied Mathematics	Program Ranking: 12/169
• 2025 ShanghaiTech Outstanding Student Award (Top3%)	
• 2023 ShanghaiTech Merit Student Award (Top10%)	
<b>University of California, Berkeley</b>	Aug 2024 – Jun 2025
• Undergraduate Exchange Program in Computer Science	GPA: 3.8/4.0
• 2025 ShanghaiTech International Exchange Program Scholarship (~\$14,000)	

## AWARDS

- **National Scholarship 2025** Dec 2025
- **Outstanding Winner Award (Top 0.1%): Mathematical Contest in Modeling 2025 (MCM)** Jun 2025
- **American Mathematical Society Award (Top 3 / 21,054): MCM** May 2025
- **1<sup>st</sup> Place Winner:** Bay Area Data Science Summit 2025 @ UC Berkeley endorsed by Wells Fargo Mar 2025

## RESEARCH INTERESTS & CAPACITIES

- **Embodied AI:** Interested in embodied perception and decision-making that connects rich visual understanding with closed-loop robot behavior. Experienced with object detection, multiview geometry and increasingly focused on vision–language models for grounding human instructions and social context into actionable navigation and control in dynamic real-world environments.
- **Reinforcement Learning:** Solid foundation in algorithms such as Thompson Sampling, variance-aware linear bandits, Langevin Monte Carlo exploration, and robust MDPs. Capable of designing and analyzing efficient exploration and convergence strategies for sequential decision-making under uncertainty.
- **AI Interpretability:** Experienced in analyzing neural mechanisms at the level of neurons and feature vectors, with a particular focus on testing and refining the linear representation hypothesis. Skilled in decomposing latent spaces, probing vector directions, and evaluating their causal influence on model behavior.

## PUBLICATION

- \*Junting Chen, \*Yunchuan Li, \*Panfeng Jiang, Jiacheng Du, Zixuan Chen, Chenrui Tie, Jiajun Deng, Lin Shao, “LISN: Language-Instructed Social Navigation with VLM-based Controller Modulating,” September 2025, Accepted, *the 2026 IEEE International Conference on Robotics & Automation*
- H. Su, Y. Feng, D. Gehrig, Panfeng Jiang, L. Gao, X. Lagorce, and L. Kneip, “A Linear N-Point Solver for Structure and Motion from Asynchronous Tracks,” May 2025, Accepted (Highlight Paper), *the IEEE/CVF International Conference on Computer Vision*
- Panfeng Jiang, Max Van Fleet, Weitong Zhang, “Improved Analysis For Variance-Aware Langevin Monte Carlo Thompson Sampling,” September 2025, Submitted

\*Equal contribution

## RESEARCH AND WORKING EXPERIENCES

### Lin Shao's Lab, National University of Singapore (Also affiliated with RoboScience Co Ltd., Shenzhen)

Research Assistant / Intern

Jun 2025 – Sep 2025  
Advisor: Dr. Lin Shao

- Deployed and integrated the RoboPoint vision–language model into a ROS-based navigation framework, enabling robots to interpret social cues and language instructions in real time.
- Extended the Social Force Model (SFM) with dynamic, VLM-conditioned parameters and costmaps, improving socially compliant behaviors such as yielding, following, and keeping context-aware distances.
- Built and validated a VLM-driven social navigation pipeline in ROSNav-Arena 2.0, combining fast-slow control architecture with DWA/TEB planners to achieve real-time, collision-free navigation in complex human–robot interaction scenarios.

### Weitong Zhang's Lab, UNC Chapel Hill Research Assistant

Apr 2025 – Present  
Advisor: Dr. Weitong Zhang

- Integrated the latest proof framework for linear bandits into the Langevin Monte Carlo Thompson Sampling (LMC-TS) environment; formalized the convergence behavior of LMC toward a Gaussian distribution under infinite steps and aligned it with cutting-edge regret analysis for linear bandits, resulting in a refined and improved upper bound on regret.
- Introduced a variance-aware mechanism to the framework by incorporating heteroscedasticity across actions moving beyond standard homoscedastic assumptions to derive a more nuanced and practical regret bound that adapts to varying noise levels.
- Addressed the finite-step LMC setting where sampling is approximately Gaussian by deriving a regret bound explicitly dependent on the number of exploration steps  $K_t$ . This bridges asymptotic theory with practical application, demonstrating convergence to the classical linear bandit bound as  $K_t \rightarrow \infty$ , while maintaining computational efficiency for finite  $K_t$ .

### **Mobile Perception Lab, ShanghaiTech University**

*Research Assistant*

Apr 2023 – Mar 2025

*Advisor: Prof. Laurent Kneip*

- Developed the core real-time detection module for identifying LED matrices, and contributed to the LED encoding and tracking modules ensuring high-precision localization and stable data transmission.
- Integrated feature trackers including ArcStar and RATE for the second publication, enabling capture of temporally varying key points. This enhanced the extraction of event-based feature locations, supplying the solver with more accurate and richer tracking data for improved ego motion estimation.

## **SELECTED PROJECT EXPERIENCES**

### **Beyond the LRH in LLMs: Controlled Perturbations and Concept Subspaces**

Mar 2025 – May 2025

*CS182: Designing, Visualizing and Understanding Deep Neural Networks @UC Berkeley*

- Proposed a novel curvature-aware framework that challenges the conventional Linear Representation Hypothesis (LRH), enabling control beyond linear subspaces. Pioneered the design of nonlinear concept steering mechanisms for LLMs, achieving robust and interpretable manipulation of sentiment, factuality, and writing style.

### **Multi-Layer Perceptron for Optimal Equity Derivative Hedging**

Feb 2025 – Mar 2025

*1<sup>st</sup> Place Winner Project @Bay Area Decision Science Summit 2025*

- Developed a Multi-Layer Perceptron (MLP) designed to capture complex, non-linear market dynamics. By integrating real-time data processing, exposure-PnL mapping, and a dynamic greedy strategy, the model adapts intelligently to evolving market conditions.

### **Disentangling Object Motion for Self-supervised Depth Estimation**

Sep 2023 – Jan 2024

*CS172: Computer Vision I @ ShanghaiTech*

- Led the design of a motion disentanglement module to segment dynamic objects and compensate for their motion, significantly enhancing depth estimation accuracy in dynamic environments; developed an occlusion-aware cost volume and a reprojection loss function to improve depth prediction consistency in complex scenes with occlusions and motion.

## **ACTIVITIES**

### **CS101A, Data Structure (ShanghaiTech Honor Class)**

*Teaching Assistant*

Aug 2025 – Jan 2026

- Assisted in designing and launching the university's first honors-level data structure course, developing syllabus, programming assignments, and advanced instructional materials tailored for high-achieving students.

### **Rubik's Cube Competitions**

*Staff & Referee*

Jul 2023 - Mar 2025

- Officiated as staff and referee for multiple official Rubik's Cube competitions, including Bay Area Speedcubin' 65, Berkeley Fall 2024, Berkeley October Weekday Tricubealon 2024, , and Changsha Rubik's Cube Open 2023.
- Enforced competition regulations to ensure fair play and impartial judging throughout events; coordinated competitor flow and managed station operations to maintain efficient event pacing; supported overall event logistics including setup, registration, and awards facilitation.

## **OTHER QUALIFICATIONS | SKILLS**

- **TOEFL:** 106 L28 R28 W 24 S26 | **COMPUTING:** C/C++, Python, ROS (Robotic Operation System), Latex