

JIANG, Panfeng

pj2479@columbia.edu | +86 153 8185 2076 | GitHub: jiangpf2022.github.io/academic_homepage

EDUCATION

Columbia University, New York, NY, US

Incoming Aug 2026

- Master of Science Program in Computer Science

ShanghaiTech University (ShanghaiTech), Shanghai, China

Sep 2022 – June 2026

- Bachelor of Engineering in Computer Science GPA: 3.75/4.0 (Ranking: 11/161)
- Outstanding Graduate of ShanghaiTech University
- ShanghaiTech Outstanding Student Award (Top 3%) | ShanghaiTech Merit Student Award (Top10%)

University of California, Berkeley, Berkeley, CA, US

Aug 2024 – Jun 2025

- Undergraduate Exchange Program in Computer Science GPA: 3.8/4.0
- 2025 ShanghaiTech International Exchange Program Scholarship

AWARDS

- National Scholarship 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
- 1st Place: Bay Area Data Science Summit 2025 @ UC Berkeley endorsed by Wells Fargo Mar 2025

RESEARCH INTERESTS & CAPACITIES

- **Theoretical RL:** Interested in reinforcement learning, multi-armed bandits, Thompson Sampling, and online learning under uncertainty. Experienced in theoretical analysis of variance-aware linear bandits, regret bounds, posterior sampling, anti-concentration arguments, and Langevin Monte Carlo-based approximate exploration.
- **Embodied AI:** Experienced in embodied AI, robotic perception, and language-instructed social navigation. Worked on vision-language-model-based navigation systems that connect high-level language understanding with low-level motion planning and controller modulation. Interested in extending uncertainty-aware decision-making and reinforcement learning methods to real-world embodied agents operating in dynamic human environments.
- **AI Systems and Applied ML:** Broadly trained in machine learning, optimization, computer vision, and data-driven decision systems. Experienced in applying AI methods to real-world problems including robotic navigation, event-based vision, 3D reconstruction, and financial decision-making.

PUBLICATION

- **Panfeng Jiang**¹, Junting Chen¹, Yunchuan Li¹, 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*

RESEARCH EXPERIENCES

Weitong Zhang’s Lab, UNC Chapel Hill

Apr 2025 – Present

Research Assistant

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.
- 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 Kt .

- **Research outcome: Panfeng Jiang, Max Van Fleet, Weitong Zhang, “Improved Analysis For Variance-Aware Langevin Monte Carlo Thompson Sampling,” September 2025, manuscript in preparation.**

Lin Shao’s Lab, National University of Singapore

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.

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

1st 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.

Rebalancing Nature’s Scale: A Model to Tame Overtourism

Feb 2025 – Mar 2025

Outstanding Winner Award & AMS Award @ MCM 2025

- Developed a dynamic Spatio-Temporal Dynamic Model using coupled ordinary differential equations to simulate system interactions and designed targeted intervention strategies incorporating tax-revenue allocation. Evaluated policies via Analytic Hierarchy Process scoring to identify optimal solutions. The model demonstrated strong performance in simulation, effectively mitigating overtourism in Juneau and Big Sur.

ACTIVITIES

SI100B, Introduction to Information Science and Technology

Teaching Assistant

Feb 2025 – present

- Assisted in recitations, office hours, assignment design, and grading for an introductory information science and data structures course.

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