Jingyuan Liu

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Research Interests

- Sequential Decision-Making
- Multi-Armed Bandit
- Learning under Biased and Limited Data

Education

- **Nanjing University** *Sep. 2022 - Jul. 2026*
  Major: Intelligence Science and Technology Jiangsu, China
  ◦ GPA: 4.46/5.00; Important Courses: Convex Optimization, Machine Learning, Probability and Statistics
- **University of Pennsylvania** *Aug. 2024 - Dec. 2024*
  International Guest Student Program (IGSP) Pennsylvania, USA
  ◦ GPA: 4.00/4.00; Important Courses: Stochastic Processes (A+), Mathematics of Machine Learning
- **University of Massachusetts Amherst** *Jul. 2024 - Aug. 2024*
  Visiting Student, Advisor: ***Prof. Mohammad Hajiesmaili*** Massachusetts, USA
- **Carnegie Mellon University** *Dec. 2024 - Jan. 2025*
  Visiting Student, Advisor: ***Prof. Carlee Joe-Wong*** Pennsylvania, USA

Publications & Preprints

[1] **J. Liu**, H. Qiu, L. Yang and M. Xu. Distributed Multi-Agent Bandits Over E-R Random Networks. **NeurIPS 2025**

[2] **J. Liu**, Z. Zhang, X. Wang, X. Liu, J. Lui, M. Hajiesmaili and C. Joe-Wong. Offline Clustering of Linear Bandits: Unlocking the Power of Clusters in Data-Limited Environments. In submission to ICLR 2026

[3] **J. Liu**, F. Ghaffari, X. Wang, X. Liu, M. Hajiesmaili and C. Joe-Wong. Offline Clustering of Preference Learning with Active-data Augmentation. In submission to SIGMETRICS 2026

Research Experiences

- **Distributed Multi-Agent Bandits Over Erdős-Rényi Random Networks *(Pub Index [1])*** *2024-2025*
  Advisor: Prof. Mengfan Xu, UMass Amherst, Prof. Lin Yang, Nanjing University
  ◦ Introduced heterogeneous multi-agent bandits over Erdős-Rényi random networks with randomly activated edges
  ◦ Designed a distributed algorithm combining gossip communication and arm elimination for efficient collaboration
  ◦ Proved near-optimal regret bounds and validated the regret–communication tradeoff via analysis and experiments
- **Offline Clustering of Contextual Linear Bandits *(Pub Index [2])*** *2024-2025*
  Advisor: Prof. Carlee Joe-Wong, CMU, Prof. Mohammad Hajiesmaili, UMass Amherst, Prof. Xutong Liu, UW Tacoma
  ◦ Introduced the first offline clustering framework for bandits leveraging limited and biased offline data
  ◦ Developed tailored algorithms for both data-insufficient and data-sufficient regimes
  ◦ Proved near-optimal suboptimality bounds capturing a noise–bias tradeoff, validated by experiments
- **Offline Clustering of Preference Learning with Active-data Augmentation *(Pub Index [3])*** *2025*
  Advisor: Prof. Carlee Joe-Wong, CMU, Prof. Mohammad Hajiesmaili, UMass Amherst, Prof. Xutong Liu, UW Tacoma
  ◦ Introduced offline clustering framework of preference learning with active-data augmentation
  ◦ Designed algorithms for both the pure offline setting and the active-data augmented setting
  ◦ Proved suboptimality bounds in both settings and demonstrated sample efficiency gains from active-data

Project Experiences

- **Glioma MRI Segmentation with U-Net/3D-U-Net** *Jan. 2024 - Feb. 2024*
  Imperial Data Science Winter School, Imperial College London London, UK
  ◦ Built an end-to-end MRI pipeline and trained U-Net/3D-U-Net on **618** scans, achieving $\approx$ **0.9** Dice on typical cases
  ◦ Analyzed failure modes (healthy-scan false positives) and refined the evaluation protocol
- **AI Education Pathways for Women and Minorities in STEM and Business Analytics** *Jul. 2024*
  Advisor: Prof. Alice Cheng, GEARS Program, North Carolina State University North Carolina, USA
  ◦ Completed a faculty-mentored research project at NCSU and presented findings via a poster
  ◦ Mapped key barriers and motivations across the pipeline for women and minorities in STEM and business analytics
  ◦ Proposed AI interventions (e.g., personalized learning paths) with actionable steps to expand access and mobility.
- **UNICORN-MAML Reproduction and Integration (LibFewShot)** *May. 2024 - Jun. 2024*
  Introduction to Machine Learning Course Project, Nanjing University Jiangsu, China
  ◦ Conducted literature review of MAML variants and evaluation protocols to guide design and benchmarking
  ◦ Integrated UNICORN-MAML in LibFewShot via uniform init and gradient accumulation to limit label permutation

Professional Skills & Honors

Programming Skills: C++, Python (PyTorch, NumPy), MATLAB, R, CUDA, LaTeX
Languages: TOEFL: 101 (R27, L26, S22, W26), DET: 130 (L135, Com135, Con125), Mandarin
Honors and Awards: People's Scholarship, The First Prize in 37th Chinese Math Olympiad (Jiangsu Province)

References

1. **Carlee Joe-Wong**
   Robert E. Doherty Career Development Professor, Department of Electrical and Computer Engineering
   Carnegie Mellon University
   Email: cjoewong@andrew.cmu.edu

2. **Mohammad Hajiesmaili**
   Associate Professor, Manning College of Information and Computer Science
   University of Massachusetts Amherst
   Email: hajiesmaili@cs.umass.edu

3. **Mengfan Xu**
   Assistant Professor, Department of Mechanical and Industrial Engineering
   University of Massachusetts Amherst
   Email: mengfanxu@umass.edu