

Research Roadmap

1

2

3

4

可识别性、部分识别与最优传输

围绕观测数据、结构假设与可识别边界之间的关系，研究部分识别、代理变量与最优传输方法。

期刊论文

- 1 Partial Identification with Proxy of Latent Confounding via Sum-of-ratios Fractional Programming: Extended (IJOO 2026)
- 2 A Minimax Learning Approach for Causal Inference Under Unmeasured Confounding with Negative Controls (JMLR 2026, R&R)

会议论文

- 1 Tight Partial Identification of Causal Effects with Marginal Distribution of Unmeasured Confounders (ICML 2024, Spotlight)
- 2 Partial Identification with Proxy of Latent Confounding via Sum-of-ratios Fractional Programming (UAI 2024)
- 3 Partial Identification under High-Dimensional Potential Outcomes and Confounders via Optimal Transport (ICML 2026)

网络干扰下的实验设计与推断

围绕网络结构、干扰机制与估计效率之间的关系，研究设计—推断一体化之间的性能权衡。

期刊论文

- 1 Adjustment Auxiliary Variables Under Approximate Neighborhood Interference (JASA 2026, Minor Revision)

会议论文

- 1 Online Experimental Design With Estimation—Regret Trade-off Under Network Interference (NeurIPS 2025)
- 2 Design-Based Bandits Under Network Interference: Trade-Off Between Regret and Statistical Inference (NeurIPS 2025)
- 3 Off-Policy Evaluation Beyond Overlap under Network Interference (ICML 2026)
- 4 Unveiling Environmental Sensitivity of Individual Gains in Influence Maximization (NeurIPS 2025)

现实约束下的因果学习与决策

面向有限样本、结构性不重叠、复杂处置与产业约束，发展可靠地因果学习与决策方法。

会议论文

- 1 Robust Causal Inference for Recommender System to Overcome Noisy Confounders (SIGIR 2023)
- 2 Active Treatment Effect Estimation via Limited Samples (ICML 2025)
- 3 Causal Representation Learning with Optimal Compression and Complex Treatments (ICML 2026)
- 4 Causal Matrix Completion under Multiple Treatments via Mixed Synthetic Nearest Neighbors (ICML 2026)
- 5 Feasible Fusion: Constrained Joint Estimation under Structural Non-Overlap (ICML 2026)
- 6 Budgeted Active Experimentation for Treatment Effect Estimation from Observational and Randomized Data (ICML 2026)
- 7 Treatment Responder Classification with Abstention (ICML 2026, Spotlight)
- 8 MUBench: A Benchmark for Lifelong Unlearning Evaluation in MLLMs (ICML 2026)
- 9 Wasserstein Policy Learning for Distributional Outcomes (COLT 2026)

未来拓展

拓展方向 1：面向组合空间爆炸的新型干预设计

利用大模型、语义结构与生成式方法，处理组合干预与复杂行动空间中的实验设计问题

拓展方向 2：战略环境中的可信 AI 决策理论

如何设计规则、干预和采样策略，使复杂智能体系统朝期望方向演化。

在现有因果推断与在线学习主线基础，向大模型与新型干预场景拓展。

核心主线： 识别边界 → 实验设计 → 学习与决策 → 大模型与新型干预