Ruoqi Liu

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EDUCATION

The Ohio State University (OSU) — **Columbus, OH**
Ph.D. in Computer Science — *Mar 2019 - May 2024 (Expected)*
Advisor: Prof. Ping Zhang

The Ohio State University (OSU) — **Columbus, OH**
M.S. in Computer Science — *2018 - 2019*

Wuhan University (WHU) — **Wuhan, China**
B.Eng. in Computer Science — *2014 - 2018*
GPA: 3.78/4, Outstanding Graduate Award
Thesis: *Gene-Disease Associations Mining based on Recommendation System*

RESEARCH INTERESTS

My current research primarily focuses on the intersection of machine learning and causal inference: 1) leverage advanced machine learning techniques for addressing challenges in causal inference (e.g., treatment effect estimation), and 2) leverage causal inference for building explainable and robust machine learning models.

PUBLICATIONS

The full list of my papers is available at Google Scholar.
* indicates equal contributions

[1] **Ruoqi Liu**, LingfeiWu, Ping Zhang, "KG-TREAT: Knowledge Graph Enhanced Pretraining for Treatment Effect Estimation", *KDD 2023* (under review).

[2] **Ruoqi Liu**, Pin-Yu Chen, Ping Zhang, "CURE: A Pre-training Framework on Large-scale Patient Data for Treatment Effect Estimation" (under review).

[3] **Ruoqi Liu**, Katherine H. Buck, Jeffrey M. Caterino, Ping Zhang, "Estimating Trustworthy Treatment Effects for Antibiotic Stewardship in Sepsis", *Nature Machine Intelligence*, 2023 (Impact factor: 25.898).

[4] Zhizhen Zhao **Ruoqi Liu**, Jonathan Groner, Henry Xiang, Ping Zhang, "Data imputation for clinical trial emulation: A case study on impact of intracranial pressure monitoring for traumatic brain injury", *American Medical Informatics Association Informatics Summit* (**AMIA Summit**), 2023.

[5] Changchang Yin, **Ruoqi Liu**, Jeffrey Caterino, Ping Zhang, "Deconfounding Actor-Critic Network with Policy Adaptation for Dynamic Treatment Regimes.", *ACM SIGKDD Conference on Knowledge Discovery and Data Mining* (**KDD**), 2022 (Acceptance rate: 254/1695 = 15.0%, research track, oral presentation).

[6] Zhizhen Zhao **Ruoqi Liu**, Lei Wang, Lang Li, Chi Song, and Ping Zhang, "A Computational Framework for Identifying Age Risks in Drug-Adverse Event Pairs.", *American Medical Informatics Association Informatics Summit* (**AMIA Summit**), 2022.

[7] **Ruoqi Liu**, Lai Wei, Ping Zhang, "A deep learning framework for drug repurposing via emulating clinical trials on real world patient data", *Nature Machine Intelligence* 3:68-75, 2021 (Impact factor: 25.898).
Selected Media Coverage: Nature Reviews Drug Discovery, Ohio State News, Bio-IT World

[8] **Ruoqi Liu**, Changchang Yin, Ping Zhang, "Estimating Individual Treatment Effects with Time-Varying Confounders", *IEEE International Conference on Data Mining* (**ICDM**), 2020 (Acceptance rate: 91/930 = 9.8%, regular paper, oral presentation).

[9] Changchang Yin, **Ruoqi Liu**, Dongdong Zhang, Ping Zhang, "Identifying sepsis subphenotypes via time-aware multi-modal auto-encoder", *ACM SIGKDD Conference on Knowledge Discovery and Data Mining* (**KDD**), 2020 (Acceptance rate: 216/1279 = 16.9%, research track, oral presentation).

[10] Qianlong Wen*, **Ruoqi Liu***, Ping Zhang, "Clinical connectivity map for drug repurposing: using laboratory results to bridge drugs and diseases", *BMC Medical Informatics and Decision Making*, 2021 (to appear).

[11] **Ruoqi Liu**, Ping Zhang, "Towards early detection of adverse drug reactions: combining pre-clinical drug structures and post-market safety reports", *BMC Medical Informatics and Decision Making* 19:279, 2019.

[12] Wen Zhang, Xiang Yue, Feng Huang, **Ruoqi Liu**, Yanlin Chen, FengHuang, Chunyang Ruan, "Predicting drug-disease associations and their therapeutic function based on the drug-disease associationbipartite network", *Methods* 145:51-59, 2018

[13] Wen Zhang, Xiang Yue, Weiran Lin, Wenjian Wu, **Ruoqi Liu**, Feng Huang,Feng Liu, "Predicting drug-disease associations by using similarity constrained matrix factorization", *BMC Bioinformatics* 19:233, 2018

WORK EXPERIENCE

Pinterest Labs — **San Francisco, CA**
Research Intern — *May - Aug 2022*

- Research project of real-time user sequence study for personalized re-ranking in related pins.
- Explored transformer-based sequence models for encoding real-time user actions (i.e., click-through, re-pin, etc.) and corresponding time information (i.e., timestamp and duration).
- Achieved **2-3%** improvement of important user engagement metrics in online evaluation.

SERVICES

- Conference sub reviewer: KDD, IJCAI, AAAI, ICML, NeurIPS, ICLR.
- Journal sub reviewer: Patterns, Nature Communication, Lancet Digital Health.
- Conference reviewer: SDM, AMIA.
- Journal reviewer: Bioinformatics, BMC Medical Informatics and Decision Making

HONORS & AWARDS

- Outstanding Graduates, WHU (top 10%) *2018*
- Excellent Graduation Thesis Award, WHU (top 5%) *2018*
- The First Prize Scholarship, three times, WHU *2015-2018*

TECHNICAL SKILLS

GitHub: https://github.com/ruoqi-liu

- **Computer Languages:** Python, Java, MATLAB, MySQL
- **Library & Package:** PyTorch, TensorFlow, NumPy, Pandas, Scikit-learn,
- **Tools:** Git