Liwen Sun

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EDUCATION

Carnegie Mellon University *Aug. 2023–Present*

Master of Science in Intelligent Information Systems (Language Technologies, Computer Science)

Research Interest: Text Mining, Graph Mining, Multimodal Information Retrieval

University of Illinois at Urbana-Champaign *Aug. 2020–May 2023*

Bachelor of Science in Computer Science and Mathematics GPA: 4.0/4.0

Honor: Summa Cum Laude and Bronze Tablet ***(highest undergraduate honor***, top 3% in college, final year), James Scholar (top 5% in department, every semester), Dean's List (top 5% in college, every semester)

PUBLICATION

1. *ED-Copilot: Reduce ED Wait Time with Language Model Diagnostic Assistance,* preprint, 2024
   Liwen Sun, Abhineet Agarwal, Aaron Kornblith, Bin Yu, and Chenyan Xiong
2. *Citation Prediction for Text-rich Network,* preprint, 2022
   Liwen Sun, Wei Hu, Xinyi He, Qi Zhu, and Jiawei Han
3. *Few-shot Text Classification with Dual Contrastive Consistency,* preprint, 2022
   Liwen Sun, and Jiawei Han
4. *Causal Fusion for Recommender System*, CONF-CDS, 2022
   Liwen Sun, Chi Zhang, Zilin Su, Feiran Zhang, and Yuen Zhou

RESEARCH EXPERIENCE

ED-Copilot: Reduce ED Wait Time with Language Model Diagnostic Assistance Pittsburgh, PA

Research Assistant *Aug. 2023 – Dec. 2023*

Supervisor: **Chenyan Xiong**, Carnegie Mellon University

- Utilize publicly available patient records and collaborate with real clinicians in the emergency department to curate a MIMIC-ED-Assist benchmark to advance research in the AI healthcare domain.
- Developed an ED-Copilot agent to offer cost-effective diagnostic assistance by using BioGPT to encode patient information and reinforcement learning from human feedback (RLHF) to minimize laboratory test time and maximize prediction accuracy of critical outcomes simultaneously.

Taxonomy-guided Reviewer Match Champaign, IL

Research Assistant (Data Mining Group) *Mar. 2023 – Aug. 2023*

Supervisor: **Jiawei Han**, University of Illinois at Urbana-Champaign

- Proposed a novel fine-grained taxonomy construction method by GPT-4 to guide topic classification for paper-reviewer matching and author identification tasks.
- Explored parameter-efficient large language model architectures to optimize model fine-tuning.

Early Detection and Prediction of Parkinsonism Powered by Multi-Modal Few-Shot Learning Champaign, IL

Research Intern (National Center for Supercomputing Applications) *Oct. 2022 – Jan. 2023*

Supervisor: **Yuxiong Wang**, University of Illinois at Urbana-Champaign

- Incorporated video modality with a vision transformer by aggregating spatiotemporal region attention.
- Explored time-series models to identify Parkinsonism via frame-level geometrical keypoint features.

Citation Prediction in Text-rich Network Champaign, IL

Research Assistant (Data Mining Group) *Sep. 2022 – Jan. 2023*

Supervisor: **Jiawei Han**, University of Illinois at Urbana-Champaign

- Proposed a novel citation prediction framework of joint modeling graph structure and textual signals to facilitate mutual enhancement in the text-rich heterogeneous bibliographic network by clustering paper embeddings from multi-view graphs and retrieving quality target papers.
- Designed embedding propagation strategies with graph neural network to aggregate neighbor paper's auxiliary textual attributes into query paper's representation. Implemented approximate personalized PageRank to reduce computation cost from graph neighbors

Few-Shot Text Classification with Dual Contrastive Consistency Training Champaign, IL

Research Assistant (Data Mining Group) *May 2022 – Oct. 2022*

Supervisor: **Jiawei Han**, University of Illinois at Urbana-Champaign

- Proposed a novel semi-supervised framework to perform text classification in few-shot settings by leveraging noisy unlabeled data from back-translation and integrating supervised contrastive learning on few-labeled data.
- Devised a novel contrastive consistency schema that can generate soft pseudo-labels for propagating feature structure from labeled examples to unlabeled ones dynamically.

Causal Fusion for Recommender System Pittsburgh, PA

Remote Research *Dec. 2021 – Mar. 2022*

Supervisor: **Pradeep Ravikumar**, Carnegie Mellon University

- Adapted matrix factorization models and unbiased estimation techniques by causal inference to handle selection bias from user-item rating in the recommender system.
- Integrated causal inference into neural collaborative filtering framework to boost rating model robustness and scalability.

TECHNICAL STRENGTHS

Programming Languages: Proficient in Python, C/C++, Java, Haskell
Machine Learning Package: PyTorch, TensorFlow, Scikit-learn, PyG
Web Development: HTML, CSS, Bootstrap, Python Flask, JavaScript
Database Management Systems: MySQL, MongoDB, Neo4j