

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. *Citation Prediction for Text-rich Network*, preprint, 2022
Liwen Sun, Wei Hu, Xinyi He, Qi Zhu, and Jiawei Han
2. *Few-shot Text Classification with Dual Contrastive Consistency*, preprint, 2022
Liwen Sun, and Jiawei Han
3. *Causal Fusion for Recommender System*, CONF-CDS, 2022
Liwen Sun, Chi Zhang, Zilin Su, Feiran Zhang, and Yuen Zhou

RESEARCH EXPERIENCE

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 different 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 into pre-trained vision backbone by aggregating spatiotemporal region attention.
- Explored different 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 based on multiple types of relations and entities in the text-rich network by clustering paper embeddings from multi-view graphs and retrieving quality target papers.
- Implemented approximate personalized PageRank to reduce computation cost from graph neighbors and retrieve query paper's top K ones in a heterogeneous bibliographic network.
- Designed embedding propagation strategies to aggregate neighbor paper's textual information into query paper.

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 recommender system. Integrated causal inference into neural collaborative filtering framework to boost rating model robustness and scalability.

- Proposed data fusion algorithm and incorporated unbiased data into biased training dataset to jointly learn doubly robust estimator for matrix factorization called MF-DRJL to debias and optimize prediction and imputation error model.

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