Yi Zhou

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Education

2021 – 2024 **Sichuan University**, M.S. in Computer Science and Technology, *GPA: 3.76/4*.
Advisor: Prof. **Min Zhu**, Lab: Vision Computing Lab

2017 – 2021 **Sichuan University**, B.E. in Computer Science and Technology, *GPA: 3.77/4*.
Under the Wu Yuzhang Honors program

Research Interests

I am interested in **Graph Machine Learning & Data Mining**. There are many interesting data-centric intersections, graph neural networks + language models learn knowledge, and AI4Science + trustworthy AI + human-computer interaction benefit humans.

Publications and Preprints

UR denotes Under Review

J1 **Yi Zhou**, Xinyi Wang, Lin Yao, Min Zhu. "LDAformer: Predicting LncRNA-Disease Associations based on Topological Feature Extraction and Transformer Encoder". *Briefings in Bioinformatics (**BIB**)*, 2022. (JCR-Q1, IF: 9.5)

C1 Wenwen Gao, Shangsong Liu, **Yi Zhou**, Fengjie Wang, Feng Zhou, Min Zhu. "GBDT4CTRVis: Visual Analytics of Gradient Boosting Decision Tree for Advertisement Click-Through Rate Prediction". *China Visualization and Visual Analytics Conference (**ChinaVis**)*, 2023.

J3 (UR) **Yi Zhou**, Meixuan Wu, Chengzhou Ouyang, Xinyi Wang, Min Zhu. "Generalizable Prediction of Potential MiRNA-Disease Association based on Heterogeneous Graph Learning". *Briefings in Bioinformatics (**BIB**)*.

J2 (UR) Jiamin Zhu, Meixuan Wu, **Yi Zhou**, Haotian Zhu, Min Zhu. "Dowsing: A Task-Driven Approach for Multiple-View Visualizations Dynamic Recommendation". *Journal of Visualization (**JoV**)*.

Research Experience

Jan 2021 – Present **Research in Link Prediction on Biomedical Interaction Graph**, *Project "Visual Analysis of Heterogeneous Graph for Disease-Regulatory Factor", supported by NSFC*.

- Wrote the research content in the project declaration.
- Proposed **a Link Prediction method for lncRNA-disease** that outperformes sota baseline methods. It is composed of a process to extract multi-hop pathways between node pairs from similarity and association information and a Transformer encoder to learn the interdependencies between pathways. [J1, DOI]
- Developed a visual analytic system for the miRNA-lncRNA-disease graph together with team members, which displays heterogeneous associations based on density contour, explains the heuristic similarities of diseases, and explains the predictions derived by a logistic regression model. [Online Demo]
- Proposed **a Link Prediction method for miRNA-disease** that focuses more on **Generalizability** and **Explainability** in addition to the sota performance of basic metrics. Contributed to data, model, and result analysis: the problem is described by a miRNA-gene-disease graph constructed by ourselves, and the prediction and analysis are centered on a heterogeneous graph Transformer. [J3 (UR), Preprint, Github]

Jan 2023 – Apr 2023 **Research in Visualizational Explanation of GBDT**.

- Implemented a demo GBDT model for click-through rate prediction.
- Developed a visual analytic system together with team members, which assists advertising analysts in understanding the working mechanism of GBDT and facilitating the tuning process. [C1, Video]

Jan 2022 – May 2022 **Research in Visualization Recommendation**.
- Implemented an LSTM-based model to perceive users' analytical tasks from historical action sequences.
- Developed a mixed-initiative recommendation system for multiple-view visualizations together with team members, which can utilize and expose the user's potential analysis tasks to recommend visualizations during the explorative building phase. [J2 (UR), Webpage, Online Demo]

Patents

USE denotes Under Substantial Examination

P1 Min Zhu, Fuqiu Chen, Chunlin Long, **Yi Zhou**, Xinyi Wang. "A Visualization Method for Chromatin Hierarchy Analysis Based on Genetic Data". CN113946730A.

P6 (USE) Min Zhu, Meixuan Wu, Jiamin Zhu, **Yi Zhou**, Haotian Zhu. "An Analytical Task Perception Method that Integrates Deep Learning Models and Rules". CN116303737A.

P5 (USE) Min Zhu, Jiamin Zhu, Meixuan Wu, **Yi Zhou**, Haotian Zhu. "A Dynamic Visualization Recommendation Method Based on User Tasks". CN116204704A.

P4 (USE) Min Zhu, Xiyao Li, Chunlin Long, **Yi Zhou**, Xinyi Wang. "Chromatin Topologically Associating Domains Boundary Prediction Method Based on Multimodal Fusion". CN115831217A.

P3 (USE) Min Zhu, **Yi Zhou**, Xinyi Wang, Lin Yao. "Method and System for Long Non-coding RNA-Disease Association Prediction Based on Self-Attention Mechanism". CN115171780A.

P2 (USE) Min Zhu, Chunlin Long, Mingyang Zhang, Xinyi Wang, **Yi Zhou**. "Method and System for Predicting Chromatin Topologically Associating Domains Based on Spectral Clustering". CN114444286A.

Activities

Sep 2022 – Nov 2022 **Sichuan University - Huawei MindSpore Application Case Implementation Project**.
Reproduced Swin Transformer with MindSpore and illustrated a demo of image classification in a Jupyter Notebook file. It is selected as an application case on the official webpage of MindSpore. [Github]

Responsibilities

Jul 2022 – Present **Mentor of Bioinformatics Group, Vision Computing Lab**.
Mentoring Meixuan Wu, Chengzhou Ouyang, Wanjing Zhang, Xiyao Li, and Lin Gan.
Ongoing Projects: Prediction of Various Regulatory Factor-Disease Associations, Prediction of Enhancer-Promoter Interactions, Prediction of RNA-Protein Interactions

Sep 2021 – Present **Living Manager, Vision Computing Lab**.
Responsible for all non-academic works in the lab

Honors and Awards

2023 First-class of Excellent Graduate Scholarship by Sichuan University

2023 Tencent Scholarship of Sichuan University

2021, 2022 2 × Second-class of Excellent Graduate Scholarship by Sichuan University

2021 Certificate of Honor from Wu Yuzhang Honors College

Skills

Programming Languages Python, PyTorch, PyG, Pandas, JavaScript, HTML/CSS, SQL, Linux command, Git
Chinese, English, Fuzhou dialect