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

Graph Machine Learning & Data Mining, Trustworthy AI, AI4Science

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.

J2 (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**)*.

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 the General Program of National Natural Science Foundation of China (Grant No.62172289)*.

- Wrote the research content in the project declaration.
- Proposed **a Link Prediction method for lncRNA-disease** that outperformes sota baseline methods. It extracts multi-hop pathways between node pairs from similarity and association information and utilizes a Transformer encoder to learn the interdependencies between pathways. [J1, DOI, P3 (USE)]
- Developed a visual analytic system together with team members, which displays the heterogeneous graph and explains heuristic similarities and logistic regression-based predictions. [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. [J2 (UR), arXiv, 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 actions.
- Developed a recommendation system for multiple-view visualizations together with team members, which exposes and utilizes users' potential analysis tasks. [P5 (USE), P6 (USE), Webpage, Online Demo]
- One manuscript in the process of revision and resubmission.

Dec. 2020 – Sep. 2021 **Research in Visualization of Chromatin Structure**, *Project "Platform for Visual Analysis of Chromatin Multi-Level Structures and Gene Regulation Relationships", supported by Chengdu Science and Technology Program (Grant No.2021-YF05-02071-SN).*

- Wrote the project declaration.

- Developed a visual analytic platform based on chromatin interaction matrices with team members, one feature of which is the prediction of topological associating domains. [P1 (USE), P2 (USE), P4 (USE)]

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-working tasks 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

Languages: Chinese, English, Fuzhou dialect