

JIAJUN ZHU

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EDUCATION

Zhejiang University

Sept. 2020 - Now

B.S. in Mathematics

Rank: 5%

- Core Courses: Mathematical Analysis I/II/III (95/93/93), Advanced Algebra II (95), Ordinary Differential Equation (95), Mathematical Software (99)
- Rank: 1/64 in sophomore year

PUBLICATION

1. Jiajun Zhu, Siqi Miao, Rex Ying, Pan Li. **Understanding Sensitive and Decisive Patterns in XAI: A Case Study of Interpretability in Geometric Deep Learning**, *In Preparation*.
2. Yifei Sun, Qi Zhu, Yang Yang, Chunping Wang, Tianyu Fan, Jiajun Zhu, Lei Chen. **Fine-tuning Graph Neural Networks by Preserving Graph Generative Patterns**, *Thirty-Eighth AAAI Conference on Artificial Intelligence (AAAI)*, 2024.

RESEARCH

Interactive Reasoning of Visual Language Models

Jan. 2024 - Now

Research Intern Supervised by Prof. Yaochu Jin

Westlake University

- Proposed a paradigm enabling interaction with visual language models (VLMs) through visual reference, specifically "click and segment" actions, to augment interactivity and enhance reference accuracy.
- Enhanced the performance of VLMs in reasoning image segments by fine-tuning on Enhanced the reasoning performance of VLMs in image segments by fine-tuning them on our constructed multimodal dataset.

Interpretability of Geometric Deep Learning for Scientific Tasks

Dec. 2022 - Apr. 2024

Research Intern Supervised by Prof. Pan Li

Georgia Institute of Technology

- Adapted 12 interpretability techniques from graph neural networks to geometric deep learning models, which are widely employed in scientific tasks, and benchmarked their performance.
- Defined two critical concepts in the domain of interpretability: *sensitive patterns* and *decisive patterns*, highlighting their misalignment, an aspect previously overlooked by researchers.
- Established fundamental observations that clarify the different applications of the two categories of interpretability techniques.
- Drafted the article as the first author with Nature Machine Intelligence as the intended publication target.

Pre-training and Fine-tuning of Graph Neural Networks

Aug. 2022 - Oct. 2022

Research Intern Supervised by Prof. Yang Yang

Zhejiang University

- Implemented five baseline methods and analyze their performances across eight molecular datasets.
- Conducted a theoretical analysis of our method from the perspective of Taylor decomposition and finalized the corresponding section of the paper.

Graph Neural Networks for Electronic Property Prediction

Jan. 2022 - Jun. 2022

Team Leader Supervised by Prof. Renjun Xu

Zhejiang University

- Crawled 100k+ data of electronic density and band structure from Materials Project and Crystallography Open Database.
- Reproduced baseline models for material property prediction: CGCNN and MEGNet.

MISCELLANEOUS

- Programming languages: Python, C/C++.
- Software & Frameworks: LaTeX, Git, PyTorch, PyTorch Geometric, Transformers.