BINGJUN GUO

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EDUCATION

University of Illinois Urbana-Champaign *Urbana-Champaign, US* *Sep. 2021 – 2025 (expected)*
Bachelor of Science in Computer Engineering *GPA: 3.87/4.0*
Zhejiang University *ZJU-UIUC Institute, Haining, China* *Sep. 2021 – 2025 (expected)*
Bachelor of Engineering in Electrical and Computer Engineering *GPA: 3.98/4.0*

Proposed Individual Thesis: A Multi-Sensor System for Informative Reconstruction
Proposed Team Thesis: Long-horizon Tasks Completion by Robot Arms and Simple Instructions

ACADEMIC INTERESTS

I have utilized various weakly-supervised learning insights to represent data with various structures and modalities, while my major requires me to practically understand computer and electronic systems at all levels of abstractions. I also have educational experience in neural engineering, metaphysics, and epistemology. Ultimately, I wish to replicate how intelligence bridges the material and the mental world, going beyond how current computers bridge the physical and the digital world.

RELEVANT EXPERIENCES

Synthesizing Morphological Cell Assays from Molecular Interventions with Diffusion *Jun. – Oct. 2024*
Synthesizing Images from Multimodal Attributed Graphs *Jan. – May 2024*
Research Internship, Data Mining Group, UIUC

- Independently sought to beat Mol2Image with diffusion models, gained notable results with novel approaches, and regretfully failed at last

Foundation Models Augmented Data Cleaning Framework *Jun. 2023 – Aug. 2023*
Summer Research Program, Center for Data Science, ZJU

- Adopted BERT & contrastive learning to represent heterogenous tabular data
- Discovered how features of data fed were affecting the performance, i.e. data-centric ideology
- Experimented on improving model robustness through few-shot prompting to LLaMA-7B
- Gained a comprehensive and detailed understanding of major historical deep language models

Review of Knowledge Graph Representation Methods *Jun. 2022 – Jul. 2022*
Summer Research Project, ZJU-UIUC Institute

- Experimented concurrent knowledge graphs representation approaches (TransE, TransH, TransR, etc.) for reasoning on distinguished dataset
- Analyzed differences between the performances tracing back to features of test benches and model spaces
- Developed a first understanding of representation learning and skills to set up the research environment

PUBLICATIONS

Bowen Jin, Ziqi Pang, Bingjun Guo, Yu-Xiong Wang, Jiaxuan You, Jiawei Han, "InstructG2I: Synthesizing Images from Multimodal Attributed Graphs", NeurIPS 2024.

RELATED COURSE WORK

Representing Knowledge Graph for Reasoning with Parallelogram Analogy *Spring 2024*
Individual Project, Neural Network Modeling Lab (PSYC 489)

- Introduced parallelogram analogy (mechanism of TransE) in VAE latent space for disentangled representations of knowledge graphs to infer novel relations
- Outperformed the baseline (TransE) with insufficient training and significantly higher efficiency
- No machine learning packages involved (e.g. NumPy, PyTorch); all implemented with raw Python

A Unix-like OS Kernel *Fall 2023*
Cooperative Project, Computer Systems Engineering (ECE 391)

- Mainly responsible for developing the terminal and assembly linkages, which required sufficient familiarity with all Unix OS features including interrupts, scheduling, virtual memory, and file system; synchronization skill was especially valued

Course Overview

- A+ or A in all Physics, Philosophy, and Rhetoric courses
- A or A+ in Computer Systems Engineering, Data Structures, Database Systems, Machine Learning, Numerical Analysis, Probability with Engineering Applications, Discrete Math, Neural Network Modeling Lab, Field & Waves I, Neural Circuits and Systems, Neural Interface Engineering, and Analog Signal Processing
- A- in the other Mathematics courses including Calculus II&III, Linear Algebra (given as Matrix Analysis combined with Abstract Algebra), Differential Equations, and Models of Computation

Honors & Awards

Dean's List *Spring 2024, Fall 2023*
(~top 20% among UIUC undergrad)

Outstanding Summer Research Project *Summer 2023*
(~top 20% in ZJU-UIUC Institute)

Mathematical Contest in Modeling *Finalist* *Spring 2023*
(~top 1.5% worldwide)

Languages & Skills

TOEFL iBT *30 30 25 25* *Feb. 2023*

- Programming Languages: Python, C/C++ (including CUDA interface), x86 assembly, bash
- Mathematical Tools: SageMath, MATLAB
- Database Systems: mySQL, Neo4j, MongoDB
- Others: Traditional Chinese divination