

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: 3.93/4.0*

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: Internet of Things for Multi-sensor System

Proposed Team Thesis: Long-horizon Tasks Completion with Robotic Arms by Human 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 *May – Oct. 2024*

Synthesizing Images from Multimodal Attributed Graphs *Jan. – May 2024*

Research Internship, Data Mining Group, UIUC

- Started from processing massive data and getting familiar with diffusion models
- Independently sought improvements of Mol2Image with diffusion models afterward, gained notable results with novel approaches, and eventually failed in model's performance

Foundation Models Augmented Data Cleaning Framework *Jun. 2023 – Aug. 2023*

Summer Research Program, Center for Data Science, ZJU

- Adopted BERT & contrastive learning to represent heterogeneous tabular data and observed how features of training data were affecting the performance to certain degree
- Experimented on improving model robustness through few-shot prompting to LLaMA-7B
- Gained a comprehensive and detailed understanding of all mainstream 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 and analyzed differences between the performances tracing back to features of datasets and model structures
- Developed a first understanding of representation learning and skills to set up the research environment

RELATED COURSE WORK

Representing Knowledge Graph for Reasoning with Parallelogram Analogy *Spring 2024*

Individual Final Project, Neural Network Modeling Lab (PSYC 489)

- Introduced the parallelogram analogy (mechanism of TransE) in VAE latent space for disentangled representations to infer new relational triples on knowledge graphs, achieving a performance better than the baseline (TransE) in certain cases with insufficient training
- No machine learning packages involved (e.g. NumPy, PyTorch); all implemented with raw Python

A Unix-like Operating System Kernel *Fall 2023*

Cooperative Final 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
- Developed functions such as command history, auto-command-completion, mouse cursor, and background color switch as extended kernel features

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, 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), and Differential Equations

PUBLICATIONS

Bowen Jin, Ziqi Pang, Bingjun Guo, Yu-Xiong Wang, Jiaxuan You, Jiawei Han, “INSTRUCTG2I: Synthesizing Images from Multimodal Attributed Graphs”, NeurIPS 2024.

HONORS & AWARDS

Dean’s List (~top 20% among UIUC undergrad)	<i>Spring 2024, Fall 2023</i>
Outstanding Summer Research Project (~top 20% in ZJU-UIUC Institute)	<i>Summer 2023</i>
Mathematical Contest in Modeling Finalist (~top 1.5% worldwide)	<i>Spring 2023</i>

LANGUAGES

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

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