

ZIHAO LI

Room 5165, 614 E. Daniel St., Champaign, IL 61820

Email: zihao5@illinois.edu | Website: zihao.website | (+86) 186-3013-1289 | (+1) 217-419-9014

RESEARCH INTERESTS

Cognitive Machine Learning, Knowledge Inference, Data Mining, Spatio-Temporal Graph, Brain-inspired Computing, Reinforcement Learning, Information Retrieval, Geometric Machine Learning, etc. My life-long research goal is to achieve artificial general intelligence that is adaptive, trustworthy, and even with consciousness and creativity.

EDUCATION

Zhejiang University	Sep. 2019 – Jun. 2023
Bachelor of Engineering in Electronic and Computer Engineering (double degree)	CGPA: 4.0/4.0
University of Illinois at Urbana-Champaign	Sep. 2019 – May. 2023
Bachelor of Science in Computer Engineering (double degree)	CGPA: 3.94/4.0
All-Courses CGPA Ranking	1/64

PUBLICATIONS

Conference Paper

- [Pub1] Z. Qi*, Y. Zhao*, Z. Li*. Advanced Music Recommendation Model Based on Cross-Shaped Attention and Cluster Analysis. Accepted by *AIDSCE 2021*. (*: equal contributions) **[Acceptance Notification]**
- [Pub2] Z. Li*, Z. Kong*, Y. Song*. Novel Water Allocation Modeling of Colorado River: Water-Electricity and Efficiency-Equity Tradeoffs. Accepted by *CAMMIC 2022*. (*: equal contributions) **[Acceptance Notification]**
- [Pub3] Z. Li, J. Xu, B. He, K.D. Schewe. Fast and Exact Subgraph Isomorphism Querying: Using Embedding and Searching Techniques. Accepted by *ACAI 2022*. **[Acceptance Notification]**
- [Pub4] Z. Li*, D. Fu*, J. He. Everything Evolves in Personalized PageRank. Accepted by *The ACM Web Conference 2023 (WWW 2023)*. (*: equal contributions) [To Appear in April 2023]

SELECTED PROJECTS AND RESEARCH

- | | |
|--|-----------------------|
| Research Intern at UIUC iSAIL Lab | May. 2022 - Oct. 2022 |
| Advisor: Prof. Jingrui He, University of Illinois at Urbana-Champaign | |
| <ul style="list-style-type: none">Completed a research project about PageRank and graph mining. Submitted a paper to <i>WWW 2023</i>. This submission has been accepted. | |
| Multi-Agent Reinforcement Learning on Information Overload | Feb. 2022 - Present |
| Advisor: Prof. Lav R. Varshney, University of Illinois at Urbana-Champaign | |
| <ul style="list-style-type: none">Introduced a tax agent (a system component that controls information tax through learning), aiming to mitigate the information overload and improve the efficiency of the entire information system.Built simulation and learning environment for two close-to-life scenarios: online advertising and social media, using RLlib and AI-Economist, two frameworks for multi-agent deep reinforcement learning.Designed multiple tax policies and conducted large-scale experiments to validate the effectiveness. | |
| Pseudo-time Analysis Based on Deep Learning Approach | Oct. 2021 - Present |
| Advisor: Prof. Zuozhu Liu, Zhejiang University | |
| <ul style="list-style-type: none">Designed and implemented a deep learning network that can return a transition matrix according to the input count matrix which contains the relations of genes and cells. The model can attain over 70% hit rate.Introduced deep-learning method into the field of pseudo-time analysis. Trained and tested the model, then visualized the prediction. | |
| Study on Efficient and Accurate Subgraph Isomorphism Mining | Mar. 2021 - Oct. 2022 |
| Advisor: Prof. Klaus-Dieter Schewe, Zhejiang University | |
| <ul style="list-style-type: none">Exploited graph embedding and searching into the problem of subgraph isomorphism. At the mean time defined one possible heuristic, which is used to accelerate the computation. | |

- Proposed an algorithm and one variation of it for subgraph isomorphism querying.

Music Recommendation Model Based on Deep Learning Approach

Jun. 2021 - Aug. 2021

Advisor: Mr. Yunfei Zhao, Graduate Student at Stanford University

- Designed a music recommendation system using convolutional token embedding, cross-shaped attention encoder and cluster analysis, starting from the Mel-Spectrumgram of the audios.
- Aimed to solve the cold-start problem of collaborative filtering, which is widely used for now.

SELECTED COURSE PROJECTS

Operating System Design | ECE391: Operating System

Mar. 2022 - May. 2022

Advisor: Prof. Yih-Chun Hu and Zbigniew T. Kalbarczyk, UIUC

- Developed a Linux-like operating system with three other teammates almost from scratch.
- In addition to basic functionalities of OS such as basic device supports, interrupt handlers, memory paging, read-only filesystem, syscall support, multiple terminals and Round-Robin scheduler, we also implemented many advanced functionalities such as mouse support, graphic user interface, UDP networking and keyboard-piano. Our operating system won 2nd place in the final competition out of 70 teams.

TEACHING ASSISTANT EXPERIENCE

MATH 231 (Calculus II): Integration Skills, Convergence Tests, Power Series, Parametric Curves, Polar Coordinates

MATH 241 (Calculus III): Basic Linear Algebra, Vector Functions, Multivariate Calculus, Vector Fields

MATH 257 (Linear Algebra with Computational Applications): Advanced Linear Algebra

CS/ECE 438 (Communication Networks): Detailed 5-layer Network Model, Wireless Networks, Network Security

HONORS AND AWARDS

National Scholarship of China 2022

0.2% of Chinese university students get this award

Zhejiang University Scholarship - First Prize 2022

Top 3% students in Zhejiang University

The Mathematical Contest in Modeling - Meritorious Winner 2022

Top 7% teams in the competition

Provincial Government Scholarship of Zhejiang Province 2021

Top 3% university students in Zhejiang province

Zhejiang University Scholarship - Second Prize 2021

Top 8% students in Zhejiang University

ZJUI Academic Scholarship - Second Prize 2021

Top 3% students in ZJU-UIUC institute

Zhejiang University Scholarship - Third Prize 2020

Top 20% students in Zhejiang University

Chinese Mathematical Olympiad - Bronze Medal 2018

Top 300 in China, top 10 in Hebei Province

SKILLS

Programming or Marking Languages: Python, C, C++, x86, System Verilog, LC-3, MATLAB, HTML, Markdown

Tools: \LaTeX , Git, CUDA, Docker, Linux Machine, SSH, httpd, GitHub Pages, Notion

Frameworks: PyTorch, Gym, RLlib

Languages: Mandarin, English (**TOEFL: 110** Reading: 28, Listening: 30, Speaking: 24, Writing: 28) [**Score Report**]
(**GRE: 321 + 4.0** Verbal: 151, Quantative: 170, Analytical Writing: 4.0) [**Score Report**]

EXTRACURRICULAR ACTIVITIES

Runner-up of Zhejiang University International Campus Football Cup as the **captain** in year 2021

Champion of Zhejiang University International Campus Football Cup as the **team member** in year 2020, 2019