Kaiyan ZHAO (Phoniex)

📱 +86 13163301009 \mid 🖾 zhao.kaiyan@connect.um.edu.mo | 🖸 github.com/pheabt

Personal Profile

- Research interests: graph neural networks, reinforcement learning, and also willing to take on new challenges.
- Solid foundation: I have systematically studied deep learning related courses and worked as a research assistant in a national key laboratory throughout my master's degree, fully participating in the research process of multiple papers such as CCF-A.
- Strong coding skills: With years of practical experience as a software engineer, I have full-stack web development experience and have developed projects that have been publicly released and visited by various leaders for inspection.

Education

PhD. in Computer Science. Wuhan University

Top 194 in the world (QS ranking 2025) Project 985 University

• Currently working as a Research Assistant in the State Key Laboratory of IoT for Smart City

MSc. in Computer Science. University of Macau

Top 245 in the world (QS ranking 2025)

- Currently working as a Research Assistant in the State Key Laboratory of IoT for Smart City, the only smart city State Key Laboratory in China.
 GPA: 3.37/4
- Relevant coursework: Computer Vision and Pattern Recognition, Natural Language Processing, Discrete System Simulation, Artificial Intelligence Principles, Big Data Processing and Analysis, Computer Science Academic Seminar.

Bachelor. in Computer Science. Huazhong Agricultural University

Top 42 in China (ARWU ranking 2023) Project 211 University

- Graduated with Distinction
- GPA: 3.34/4 (Top20%)
- Certification: Huawei Certification HCIA-Big Data

Research / Projects

Enhancing Generalization in Goal-conditioned Reinforcement Learning through

Deconfounded Policy Learning with State Abstraction

under review

- Publications: Yiming Wang, Kaiyan Zhao, Ming Yang, Yan Li, Furui Liu, Leong Hou U. Enhancing Generalization in Goal-conditioned Reinforcement Learning through Deconfounded Policy Learning with State Abstraction, submitted to ICML2024
- The study explores the problem of out-of-distribution generalization (OOD) in goal-conditioned reinforcement learning (RL) from the perspective of causal inference. By identifying and processing unobserved confounders, a "state abstraction deconfounding learning (COGITATION)" method is proposed, which effectively cuts off the backdoor path leading to generalization bias. Our theoretical analysis and experimental validation demonstrate that this approach has significant advantages in improving the generalization ability of OOD.

Team-wise Effective Communication in Multi-Agent Reinforcement Learning

University of Macau

- Publications: Ming Yang, Kaiyan Zhao, Yiming Wang, Renzhi Dong, Yali Du, Furui Liu, Mingliang Zhou, Leong Hou U. Team-wise Effective Communication in Multi-Agent Reinforcement Learning. Journal of Autonomous Agents and Multi-Agent Systems, 2023
- The study introduces a novel algorithm for multi-agent cooperative reinforcement learning named TeamComm. Incorporating dynamic teaming mechanisms and intra-team communication topology, it optimizes information flow using the information bottleneck principle. Experimental results demonstrate that TeamComm surpasses existing methods in convergence rate and learning efficiency.

LIBKDV - A Versatile Kernel Density Visualization Library for Geospatial Analytics

University of Macau

- Publications: Tsz Nam Chan, Pak Lon Ip, Kaiyan Zhao, Leong Hou U, Byron Choi, Jianliang Xu. LIBKDV: A Versatile Kernel Density Visualization Library for Geospatial Analytics. Proceedings of the VLDB Endowment (PVLDB), 2022.
- Developed the first versatile programming library (LIBKDV) for Kernel Density Visualization (KDV) to overcome high resolution size and largescale datasets (e.g., one million data points) for supporting different types of KDV-based geospatial analytics.
- LIBKDV is available on GitHub: GitHub(https://github.com/libkdv/libkdv)

Development of Intelligent Transportation Platform at the University of Macau

University of Macau

- Developed an intelligent transportation cloud platform and integrated multiple systems to create a complete system integration platform.
 Conducting research on automatic driving data of cars, and implementing intelligent obstacle avoidance and display/control of car data on the system platform.
- Integrated multiple platform services onto a server display page and established internal network penetration to transmit external bus data for more efficient and safer transportation.
- Technical Skills: Python, linux, ros, rivz, django web.

Sept 2024 - Current

Wuhan, China

Macau, China Sept 2021 - June 2024

Wuhan, China Sept 2016 - June 2020

Oct 2023 - Feb 2024

Macau, China

Macau, China

Macau, China

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Oct 2021 - Current

Macau, China

Mar 2023 - Sep 2023

Nov 2021 - Feb 2022

Work Experience _____

Wuhan Jinruite Software Co.,Ltd

Software Engineer

Wuhan, China

May 2019 - Sept 2019

- Participated in the development of the River Chief Information Management System, responsible for developing some of the functions of the river chief patrol management module, such as river patrol track recording, etc.
- Participated in system requirement decomposition and legacy project document management, completed old system bug fixing and data migration.
- Participated in the testing and deployment of the River Chief Information Management System app, responsible for developing and optimizing tracking function algorithms, refreshing the dataset weekly, and resolving application change requests and previous version issues.
- Technical Skills: Python with PyTorch, NumPy, Matplotlib, Pandas, Scikit-learn, C++, Ubuntu Linux, Linux tools, Apt, Scripting, Git.

FiberHome Telecommunication Technologies Co.,Ltd

Software Development Engineer

Wuhan, China

July 2020 - May 2021

- Developed the underlying functionality at the OTN optical transport network control platform level in C, including optimization of the log output mechanism and development of some port monitoring functionality.
- Responsible for investigating and diagnosing network signaling and control platform packet loss issues. Developed the underlying messageprocessing functionality of the platform.
- Designed departmental portals and developed test plans to fully test product functionality, created and executed test cases in the test environment, and participated in product line code maintenance.
- Technical Skills: Java web,C++, Ubuntu Linux, Linux tools, Apt, Scripting, Git.

Skills_____

Programming	Python (Pandas, PyTorch, NumPy, Scikit-learn. etc.),Java,PHP, C/C++, HTML/CSS, JavaScript, SQL.
Miscellaneous	Linux, Shell (Bash/Zsh), 町石(Overleaf/R Markdown), Tableau, Microsoft Office, Firebase, Git.
Soft Skills	Time Management, Teamwork, Problem-solving, Documentation, Engaging Presentation.

Achievements _____

2020	University level, Outstanding Graduates	China
2019	University level, 2018-2019 Outstanding Student Cadre	China
2017	University level, 2016-2017 Merit Student	China
2018	Third Prize, The 12th Chinese College Students Computer Design Competition	China
2018	.8 Second Prize, 2018 Huazhong Agricultural University Information Design and Skills Contest	
2017	Second Prize, 2018 Huazhong Agricultural University Computer Design Competition	China

Interests _____

SoccerI was captain of the Institute football team in collegeTechnical WritingI write descriptive blogs about Linux some of them are on my GitHubMusicI am good at playing erhu(a traditional Chinese musical instrument)(Grade 10 Erhu Certificate—Amateur Level)

Languages_____

English	IELTs 6.5(6) Duolingo 110 Cet-6 431
Chinese	Native proficiency