

# Taiyi Wang

Email: Taiyi.Wang@cl.cam.ac.uk, Tel: (+86) 13810893171, +44 7788475798

Add: Apt 402, 3 Station Square, CB1 2GB, Cambridge, Cambridgeshire, UK

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**Personal Website:** <https://kevinwty0107.github.io/>

## ▪ Education Background

**School of Physics, Peking University**

**Major:** Physics;

**Degree:** Bachelor of Science, minor in math;

Graduation with Honor

**Beijing, China**

**09/2015 - 07/2019**

**Department of Computer Science, Johns Hopkins University**

**Major:** Data Intensive & Machine Learning Group ;

**Degree:** Master of Science and Engineering

Grade: Top 1, GPA 4.0

**Baltimore, USA**

**12/2019 - 06/2021**

**Department of Computer Science and Technology, University of Cambridge**

**Major:** System & Machine Learning Group ;

**Degree:** Doctor of Philosophy in Computer Science

**Cambridge, UK**

**09/2021 - Present**

## ▪ Research Interest

Reinforcement Learning, ML-enhanced Database Optimization, ML-enhanced System Optimization

## ▪ Papers & Posters

- [1]. Taiyi Wang, Eiko Yoneki. "IA2: Leveraging Instance-Aware Index Advisor with Reinforcement Learning for Diverse Workloads", *the 4th Workshop on Machine Learning and Systems of EuroSys, 2024(EuroMLSys'24)*
- [2]. Taiyi Wang, Eiko Yoneki. "Enhancing Generalization through Task Vector Fusion in Deep Reinforcement Learning for Database Optimization", *EuroSys, 2024 (Poster)*
- [3]. Taiyi Wang, George-Octavian Bărbulescu, Zak Singh and Eiko Yoneki. "Learned Graph Rewriting with Equality Saturation: A New Paradigm in Relational Query Rewrite and Beyond", *under review*
- [4]. Taiyi Wang, Guang Yang, Liang Liang, Thomas Heinis and Eiko Yoneki. "LITune: Tuning Learned Index Using Deep Reinforcement Learning", *under review*
- [5]. Ali Hadian, Behzad Ghaffari, Taiyi Wang and Thomas Heinis. "COAX: Correlation-Aware Indexing on Multidimensional Data with Soft Functional Dependencies", *DBML workshop of the 39th IEEE International Conference on Data Engineering (ICDE), 2023*
- [6]. Hao Sun, Taiyi Wang. "Toward Causal-Aware RL: State-Wise Action-Refined Temporal Difference." *NeurIPS 2022 Workshop DeepRL, 2022*
- [7]. Hao Sun, Ziping Xu, Meng Fang, Zhenghao Peng, Taiyi Wang, Bolei Zhou. "Constrained MDPs can be Solved by Early-Termination with Recurrent Models." *NeurIPS 2022 Workshop FMDM, 2022*
- [8]. Hao Sun, Ziping Xu, Taiyi Wang, Meng Fang, Bolei Zhou. "Supervised Q-Learning can be a Strong Baseline for Continuous Control." *NeurIPS 2022 Workshop FMDM, 2022*
- [9]. Wang, Taiyi, Shi, Jiahao, "Solving Maximal Stable Set problem via Deep Reinforcement Learning." *International Conference on Communication Technology, Computational Engineering and Artificial Intelligence (ICAART), 2020*
- [10]. Wang, Taiyi, Yajun Fang, and Berthold KP Horn. "Why do we need bilateral control?-in view of energy consumption." *2018 4th International Conference on Universal Village (UV). IEEE, 2018.*
- [11]. Wang, Taiyi, Fu, Zuntao. "Regional Studies on low-frequency variations in DTR." *Graduation thesis, Department of Atmospheric and Oceanic Sciences, School of Physics, Peking University, 2019*

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## ▪ Program Committee

EuroMLSys'24, EuroMLSys'23

## ▪ Working Experience

- Powersense Technology Limited, UK 09/2022 – Present  
Co-founder and Chief Technology Officer, Cambridge, United Kingdom
- Huawei Technology Research Center UK 06/2023 - 10/2023  
Research Scientist Intern, Database Group, Edinburgh, United Kingdom
- Baidu, Beijing 11/2018 - 05/2019  
Research and Development Engineer, Big Data Group, Beijing, China
- Sohu.com Ltd 09/2018 - 11/2018  
Research and Development Intern, Advertising Strategy Group, Beijing, China
- People's Insurance Company of China (PICC) 08/2017 - 09/2017  
Intern actuary, Actuarial Lab, Beijing, China
- China Securities Co. Ltd 06/2017 - 08/2017  
Investment Bank Research Assistant, IBD group, Beijing China

## ▪ Research Experience

- Phd Research, Computer Lab, University of Cambridge 09/2021 - Present  
Instructed by: Dr.Eiko Yoneki  
Project: RL-enhanced and ML-enhanced optimization over database management
- Research Internship, SCALE Lab, Imperial College London 05/2020 - 10/2020  
Instructed by: Prof. Thomas Heinis  
Project: Leveraging Soft Functional Dependencies for Indexing Multi-dimensional Data
- Research Assistant, Computer Science and Health Care Center, JHU 01/2020 - 05/2020  
Instructed by: Prof. Anton Dahbura  
Project: Learning-based In-Patient Therapy Analytics
- Research Assistant, Center for Data Science Peking University 04/2019 - 08/2019  
Instructed by: Prof.Weinan E (Princeton), Zaiwen Wen (BICMR)  
Project: Building Reinforcement Learning Simulator for Continuous Control
- Visiting Scholar, CUSP Big Data Interaction (BDI) Lab, NYU 06/2018 - 10/2018  
Instructed by: Prof. Huy T. Vo  
Project: Simulating Taxi Ride Sharing at Scale
- Research Assistant, Intelligent Transportation Research Center, EECS, MIT 01/2018 - 06/2018  
Instructed by: Prof. Berthold K.P. Horn, Dr. Yajun Fang  
Project: Building Bilateral Control Simulation Platform (BCSP)

## ▪ Honors & Awards

- Pillman and Cody Award, University of Cambridge 04/2024
- Runner-up in Shenzhen Innovation and Entrepreneurship Competition, Global Final, Shenzhen, China 11/2022
- Runner-up in the Chris Abell postdoc Business Plan Competition, Cambridge, United Kingdom 10/2022
- Finalist (F Awards, Top 1%), Mathematical Contest in Modeling (MCM) 04/2018
- Excellent Graduate Student Award in School of Physics, Peking University 06/2019
- Excellent Graduation thesis, Peking University 06/2019
- Special Award, the 5th Youth Physical Tournament, Peking University 05/2016
- Third Prize, Freshman Scholarship, Peking University 09/2015