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

▪ Education Background

School of Physics, Peking University	**Beijing, China**
Major: Physics;	**09/2015 - 07/2019**

Degree: Bachelor of Science, minor in math;
Graduation with Honor

Department of Computer Science, Johns Hopkins University	**Baltimore, USA**
Major: Data Intensive & Machine Learning Group ;	**12/2019 - 06/2021**

Degree: Master of Science and Engineering
Grade: Top 1, GPA 4.0

Department of Computer Science and Technology, University of Cambridge	**Cambridge, UK**
Major: System & Machine Learning Group ;	**09/2021 - Present**

Degree: Doctor of Philosophy in Computer Science

▪ 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*", Submission to MLSys'24*

[4]. Taiyi Wang, Guang Yang, Liang Liang, Thomas Heinis and Eiko Yoneki. "LITune: Tuning Learned Index Using Deep Reinforcement Learning*", Submission to SIGMOD'25*

[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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- ## Working Experience
  - ➢ **Powersense Technology Lmited, UK**   **09/2022 – Present**

    Co-founder and Chief Technology Officer, **Cambridge, United Kingdom**
  - ➢ **Huawei Technology Research Center UK**   **06/2023 - 10/2023**

    Research Scientist, 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

Runner-up in Shenzhen Innovation and Enterpreneurship 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 Univeristy	**06/2019**
Special Award, the 5th Youth Physical Tournament, Peking University	**05/2016**
Third Prize, Freshman Scholarship, Peking University	**09/2015**

- ## Others

Captain of Girton College 1st Tennis Team, University of Cambridge	**03/2022 – Present**
long-term charitable activities: funding kids in poor area to receive education	**07/2015 – Present**
Director of Debating Center, Peking University	**03/2017 – 03/2018**
Co-organizer, Students' International Communication Association (SICA), Peking University	**07/2016 – 11/2016**