

# Haoli WANG

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*Research interest: Data Mining; Graph Learning; Spatio-Temporal Data Analysis; Recommender Systems*

## EDUCATION

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**The Hong Kong Polytechnic University, Department of Computing**

**Aug 2022 — Mar 2024**

Master of Science in Information Technology, *with Distinction*

*Hong Kong*

• **GPA:** 3.62/4.3

• **Related Coursework:** Machine Learning and Data Analysis (A+); Big Data Computing (A+); Data Structures and Database Systems (A); Artificial Intelligence Concepts (A-); Natural Language Processing (A-).

**Yunnan University, National Pilot School of software**

**Sep 2014 — Jun 2018**

Bachelor of Engineering in Software Engineering

*Kunming, Mainland of China*

• **GPA:** 3.27/4.0

• **Honors:** Third-class Scholarship for Academic Excellence by YNU (Nov 2016); Outstanding Student by YNU (Nov 2016); Second-class Scholarship for Academic Excellence by YNU (Dec 2017)

## PUBLICATIONS & OWNERSHIP

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### Publications:

- **Wang, H.**, Xia, J., Yang, Y., Wang, S., Cao, J. (2024). STS2ANet: Spatio-Temporal Synchronized Sliding Attention Network for Accurate Cross-Day Origin-Destination Prediction. In: Onizuka, M., et al. Database Systems for Advanced Applications. DASFAA 2024. Lecture Notes in Computer Science, vol 14850. Springer, Singapore. doi: [https://doi.org/10.1007/978-981-97-5552-3\\_12](https://doi.org/10.1007/978-981-97-5552-3_12)
- Wen, Z., Cao, J., Yang, Y., **Wang, H.**, Yang, R., & Liu, S. (2023). DesPrompt: Personality-descriptive prompt tuning for few-shot personality recognition. Information Processing & Management, 60(5), 103422. doi: <https://doi.org/10.1016/j.ipm.2023.103422>

### Patent Ownership:

- Method and System for Traffic Flow Prediction at Highway Toll Stations (application no. 2017110227195);
- Method and system for airport parking space scheduling based on hyperheuristic method (application no. 2017109760403)

### Copyright Ownership:

- Pubo Campus Social App Software (registration no. 2017SR379137)

## RESEARCH EXPERIENCE

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**The Education University of Hong Kong, Centre for Learning, Teaching and Technology**

**Apr 2024 — Now**

*Research Assistant I — Supervisor: Prof. XU Guangdong, Dr. YANG Yu*

- Conducting research in knowledge tracing, designing and implementing a heterogeneous graph-based algorithm for knowledge tracing problems.
- Designing a novel heterogeneous graph neural network to capture the similarities and connections between question and skill nodes in knowledge tracing problems.
- Combining the theory of homogeneous grouping in education, design corresponding algorithm modules to dynamically construct connections between different individual students, forming a dynamic student relationship graph.
- Using pytorch and DGL to experiment based on the above algorithm, SOTA has been achieved on three public datasets, with a prediction improvement of around 7% on all three datasets.

**The Hong Kong Polytechnic University, Department of Computing**

**Jan 2023 — Mar 2024**

*Master Dissertation — Supervisor: Dr. YANG Yu*

- Conducted research in the field of Origin-Destination (OD) Prediction task in the traffic flow prediction, investigated new problems of cross-day OD prediction and proposed a Spatio-temporal Synchronized Sliding Attention Network (STS2ANet) to address it.
- Designed a dynamic graph embedding module and a sliding attention layer to learn the dynamic mobility pattern changes between OD pairs and accurately model the spatio-temporal dependencies of cross-day periods.
- Conducted extensive experiments on the real-world traffic dataset. The results demonstrate that STS2ANet effectively models the divergence of spatial and temporal patterns at cross-day periods while achieving higher accuracy than state-of-the-art OD prediction models.
- Paper based on this work has been accepted and published by DASFAA2024.

**The Hong Kong Polytechnic University, Department of EEE**

**Jan 2023 — Jan 2024**

*Part-time Research Assistant — Supervisor: Mr. Richard PANG*

- STT (speech2text) Module: Designed an openAI's whisper-based model for video caption generation to accurately transfer 3-hour course audio of PolyU lectures into multiple format text files, such as .json, .stt, .txt, etc.
- KCQ (Knowledge Check Question) Module: Responsible for applying open source LLMs (ChatGPT, Llama2) to generate simple quizzes (MCQ, T or F) based on provided course materials, such as PDF, text, etc.
- NLP Module: Took charge of basic NLP tasks of our project, such as sentiment analysis and grading of students' writing tasks, topic summary of uploaded documents, etc.

**The Hong Kong Polytechnic University, Department of Computing**

**Sep 2022 — Dec 2022**

*Part-time Research Assistant — Supervisor: Prof. CAO Jiannong, Dr. YANG Yu*

- Helped in designing and examining both traditional and unique machine learning algorithms for the polishing system, including linear regression and decision tree.
- Based on the research team's output, utilizing Axure to design and construct a prototype demo of relevant machine learning algorithms for the polishing system.
- Tasked with creating an object polishing simulation system using vue.js, python flask framework, and MySQL, following the established machine learning algorithms.

## **OTHER EXPERIENCE**

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**Shenzhen Lan-You Technology Co., Ltd, Guangzhou, Mainland of China**

**Apr 2021 — May 2022**

*Software Engineer*

- Coordinate resources from various aspects, organize meetings to communicate details with clients, and based on client feedback and the capabilities of the technical team, use Axure to design reasonable and usable product prototypes.
- Utilized Vue.js, HTML5, and CSS3 to build the front-end technical framework, develop customized vehicle networking systems and order transaction systems; coordinated and managed a front-end team of 5-10 persons, wrote requirement documents, and took charge of liaising with the UI/UX team and the back-end team.

**China Mobile Internet, Cloud Product Division, Guangzhou, Mainland of China**

**Jul 2018 — June 2020**

*Front-end Engineer*

- Assisted with the front-end development and maintenance of ChinMobile's competitive products and its cloud WEB & WAP end, especially debugging the incompatibility between different browsers.
- Took charge of resolving difficulties in upgrading new web-cloud technologies, achieving new functions on the WAP end, and completing the testing and launching of several new versions.

## **SKILLS**

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### **Languages**

- Fluent in English: overall IELTS score 6.5 (Reading: 7.5, Writing: 6.5, Listening: 6.5, Speaking: 6.0);
- Native speaker of Mandarin.

### **Coding Skills & Toolkit**

- Python, Java, SQL, Javascript (Vue.js, React.js), HTML5, CSS3;
- Pytorch, Pandas, Numpy, Scikit-learn, DGL, Jupyter Notebook, Git, Docker.

### **Research Skills**

- Graph Neural Networks;
- Spatio-temporal Data Mining;
- Natural Language Processing;
- Large Language Models;
- Scientific Writing and Literature Review.

### **Soft Skills**

- Effective Communication and Presentation;
- Team Collaboration and Project Management;
- Problem-solving and Analytical Thinking.