Zhenglin Wan

🎓 Google Scholar ✉ vanzl3386@gmail.com ✉ carlos@metaseq.ai 📱 +86 18323133386 ⊙ GitHub

EDUCATION

The Chinese University of Hong Kong, Shenzhen   **Sep. 2021 - Jun. 2025**

- **Major**:Data Science and Big Data Technology. **Degree**:Bachelor of Science
- **CGPA**(cumulative GPA):**3.75**/4.0 | **MGPA**(major GPA):**3.84**/4.0 | **GPA Major Rank**: **10**/144 (top **7**%)
- **Core Curriculum and Grades**:*Advanced Calculus (A)| Linear Algebra (A)| Probability theory (A)| Optimization theory (A)| Stochastic Process (A)| Mathematical Statistics (A)| Machine Learning (A)| Optimization in Data Science and Machine Learning (A)| Time Series (A)| Numerical Methods(A)| Bayesian Statistics (A-)| Advanced Machine Learning (A)| Python Programming (B+)| Data Structure (A)| Stochastic Simulation (A)| LLM and application (-) | Modern Optimization (-)*

Standardized Test

GRE: 331 (Verbal:161 + Quant:170 + Writing: 3.5)   *TOEFL*: 101 (Reading: 28 + Listening: 26 + Speaking: 23 + Writing: 24)

Honors

Zhejiang Guolong Inspirational & Diligentia Bowen II Scholarship (Outstanding Academic Performance)	**Sep. 2021**
Yearly Dean List Award (Outstanding Academic Performance) for consecutive three years	**Sep. 2022 - Sep. 2024**
Yearly Academic Scholarship: C class (year GPA **top 5%**) for second academic year	**Sep. 2023**
*Yearly Academic Scholarship: B class (year GPA **top 3%**)* for third academic year	**Sep. 2024**

Research Interest

Reinforcement Learning, Imitation Learning, LLM agent, Multi-Agent systems, Probabilistic Machine Learning, AI4Science

Publication

Academic papers

- Quality Diversity Imitation Learning   (*arxiv*)
  Author: **Zhenglin Wan**, Xingrui Yu[*], David Bossens, Yueming Lyu, Qing Guo, Flint Xiaofeng Fan, Ivor Tsang
  The Thirteenth International Conference on Learning Representations (ICLR 2025), under review

- Next-POI Recommendation via Multi-Objective Adversarial Imitation Learning
  Author: **Zhenglin Wan**, Anjun Gao, Xingrui Yu, Pingfu Chao[*], Jun Song, Maohao Ran
  The 39th Annual AAAI Conference on Artificial Intelligence (AAAI 2025), Phase II under review (phase I rejection rate: 39%)

- Graph-based Reinforcement learning Approach for influential Node Detection in airport delay networks
  Author: Chi Li, **Zhenglin Wan**, Kaize Wang, Yuxuan Huang, Chengxi Li, Jianfeng Mao[*]
  Journal *Transportation Research Part E: Logistics and Transportation Review (SCI Q1, Impact Factor: 9.2)*, under review

- Machine Learning-Driven Spatiotemporal Analysis of Ozone Exposure and Health Risks in China   (*pdf*)
  Author: Chendong Ma, Jun Song[*], Maohao Ran, **Zhenglin Wan**, Yike Guo, Meng Gao
  Journal of Geophysical Research - Atmospheres (SCI Q2, Impact Factor:4.7), accepted

- AirGPT: Pioneering the Convergence of Conversational AI with Atmospheric Science
  Author: Jun Song[*], Chendong Ma, Maohao Ran, **Zhenglin Wan**
  Journal *Science Advances (SCI Q1, Impact Factor: 13.7)*, under review

- Hierarchical Spatial-Temporal Graph-Enhanced Model for Map-Matching
  Author: Anjun Gao[†], **Zhenglin Wan**[†], Pingfu Chao[*], Shunyu Yao   ([†]: co-first author)
  Australasian Database Conference 2025, accepted

Invention Patents

- "A Method, System, Terminal Device, and Storage Medium for Air Quality Spatial Inference" (Patent Granted)
  Author: Jun Song, Yibo Xu, Yiwen Pan, Maohao Ran, **Zhenglin Wan**, Xiaoyun Yan, Yike Guo
- "A Single-UAV Atmospheric Pollutant Source Tracing Method Based on Gradient Ascent and Physical Kinematics" (Published)
  Author: **Zhenglin Wan**, Jun Song, Yibo Xu, Maohao Ran, Yike Guo
- "A Large Language Model Learning Method Based on Agent-Based Collaborative Reasoning and Action" (submitted)
- "An Atmospheric Pollutant Source Tracing Algorithm Based on Improved Swarm Optimization and Path Planning"(submitted)

ACADEMIC LEADERSHIP

Enterprise: Metasequoia Intelligence   **Founded on Dec. 2023**
Technical Co-Founder

- Led the design and development of the core product "Metasequoia: Digital AI Expert System", integrating intelligent data querying, domain querying, and policy querying capabilities to provide comprehensive AI empowerment services for industry users.
- Collaborated with cross-functional teams to develop full-spectrum industry AI solutions, including the Atmospheric Supervision AI Expert System, aligning with the company's mission to offer all-encompassing AI-enabled services.

EXPERIENCE

Major Research Experiences

⋆ ⋆ ⋆ **Quality Diversity Imitation Learning (Research Intern)**   *Supervisor:Xingrui Yu,David Bossens*   **Jun. 2024 - Oct. 2024**

*Host: Centre for Frontier AI Research, Agency for Science, Technology and Research (A*STAR), Singapore*

- Proposed measure-level curiosity mechanism together with measure-aware adversarial imitation to promote diverse behavior patterns, obtaining close-to-expert performance in Walker2d and nearly 2x expert performance in Humanoid derived from Mujoco environments.
- Pioneer 'learning from diverse behaviors" paradigm, enable imitation learning algorithms to learn a broad set of diverse skills from limited expert demonstrations. Submitted one paper to ICLR 2025 as first author.

⋆ ⋆ ⋆ **POI Recommendation via Multi-Objective Imitation Learning**   *Supervisor:Xingrui Yu*   **Feb. 2024 - Aug. 2024**

*Host: Centre for Frontier AI Research, Agency for Science, Technology and Research (A*STAR), Singapore*

- Proposed novel multi-objective imitation learning architecture with variational inference to address data sparsity, data noise issue in POI (point of interest) data. Leverage adaptive graph to capture spatial-temporal dependencies of POI sequence and user patterns.
- Empirically proved that the performance of proposed architecture exceeds the most state-of-the-art model by 8%, and by 31% in extremely sparse data scenario. Submitted one paper to AAAI 2025 as first author.

⋆ ⋆ ⋆ **Reinforcement Learning on Airport Delay Network**   *Supervisor:Jianfeng Mao*   **Jun. 2023 - Aug. 2024**

Host: School of Data Science, CUHK(sz)

- Proposed a data-driven method that combines graph representation learning with optimized value-based reinforcement learning to identify influential airports in delay networks to address the challenges of low inference efficiency and cost-unaware management.
- Implement proposed model and conduct experiments independently. Empirically proved proposed model achieve 32% performance increment in US airport delay dataset. Submitted one paper to journal *Transportation Research Part E: Logistics and Transportation Review*.

Additional Academic Experiences

⋆ ⋆ ⋆ **DEEP VIEW: Mobile Inspection and Environmental Digital AI Supervision Service Project**   **Nov. 2023 - May. 2024**

Project Consultant: Yike Guo, provost of HKUST   Supervisor: Jun Song, HKBU

- Developed an integrated, fully automated environmental monitoring and supervision service using large language model (LLM) agents and drones for comprehensive air quality monitoring.
- Seamlessly combined multi-source data fusion, drone scheduling algorithms, and deep learning-based data analysis into a unified system for real-time environmental oversight.

⋆ ⋆ ⋆ **LLM-Based Air Quality Analysis and Decision-Making Agent**   **Nov. 2023 - Jan. 2024**

Supervisor: Jun Song, HKBU

- Integrated air quality assessment methodologies into tools and designed the workflow for an LLM-based agent using LangChain, enabling intuitive, real-time interaction between users and databases for efficient data analysis.
- Finished one paper and submitted to journal *Science Advances*.

⋆ ⋆ ⋆ **Unmanned Aerial Vehicle Pollutant Tracking using Optimization Methods**   **Nov. 2023 - Feb. 2024**

Institution: Metasequoia Intelligence

- Engineered and validated cutting-edge optimization algorithms for UAV-based pollutant tracking, showcasing significant improvements in accuracy and efficiency.
- Conducted rigorous simulations to demonstrate the algorithms' effectiveness in real-world pollutant tracking scenarios, offering novel solutions for environmental monitoring. Finished two invention patents based on that.

⋆ ⋆ ⋆ **Temporal-Spatial Data-Mining on Environmental Data**   **Feb. 2023 - May. 2023**

Institution: Metasequoia Intelligence

- Leveraged seq2seq models and gradient-boosting decision trees to enhance the prediction and imputation of environmental patterns, design spatial-temporal architecture to facilitate prediction precision, achieving SOTA performance.
- Actively engaged in implementing machine learning methodology and conduct experiments. Published one paper to *Journal of Geophysical Research - Atmospheres*.

Internship Experience

Machine Learning Algorithm Internship at HUIYINTONG Industrial Internet Company (6 months)   **Jul. 2023 - Jan. 2024**

- Masterfully processed extensive datasets, employing advanced analytics to bolster the company's data analysis.
- Innovatively applied state-of-the-art deep learning techniques, contributing to the development of high-efficiency model architectures with enhanced performance metrics, perform sophisticated data-mining task.