**Yuqian WU**

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**EDUCATION**

**Beijing Normal University - Hong Kong Baptist University United International College**

**09/2021-06/2025**

* Bachelor of Science (Honours) in Artificial Intelligence
* **CGPA:** 3.63/4.0, First Class Honours Degree
* **Ranking:**  out of 47 in the AI Programme;

**INTERNSHIPS**

**Database System Research Group, NUS** *Research Intern* **07/2023-08/2023; 02/2024-03/2024**

* Analyzed the limitations of deep learning models in handling tabular data and evaluated existing deep learning embedding techniques for numerical and categorical features;
* Conducted a comprehensivce analysis of these models in Recommendation datasets, comparing their performance to the original reported results and identifying their strengths and limitations;
* Proposed a novel deep embedding framework using lightweight deep neural networks to generate efficient and effective feature embeddings for tabular data;
* Employed a two-step feature expansion and deep transformation module for capturing rich semantic information in numerical features;

**University of Birmingham** *Research Intern* **10/2024-Present**

* Conducting research on large language model (LLM)-powered agents, focusing on enhancing planning and decision-making via memory-driven self-evolution.
* Analyzing models like MoT, TiT, DIVERSE, and ExpeL to explore memory utilization for improving agent adaptability and task performance.
* Designing memory modules to store MCTS trajectories, identify failure points via entropy, and enable dynamic memory management (insert, forget, reflection) for continuous self-improvement.

**Shanghai Suiyuan Technology Co., Ltd** *Software Intern* **07/2024-09/2024**

* Led deployment optimization of large language models (LLMs), focusing on improving efficiency in distributed training environments, primarily using the Megatron-LM framework;
* Conducted detailed performance analysis and optimization of GPT models on NVIDIA V100 and A100 GPUs, specifically addressing overlap-grad-reduce and overlap-param-gather techniques;
* Tuned and tested the performance of Distributed Data Parallel (DDP), Tensor Parallel (TP), and Pipeline Parallel (PP) for enhanced performance.

**PUBLICATIONS**

* Yuqian Wu, first auther, *MAS4POI: a Multi-Agents Collaboration System for Next POI Recommendation*, (Paper ID: 673). Accepted at PAKDD 2025 (Oral).
* Yuqian Wu, first author, *Deep Feature Embedding for Tabular Data*, (Paper ID: 1399). Accepted at ICONIP 2024 (CCF-C).
* Yuqian Wu, joint first auther, *Co-Learning for Multi-Agent Reinforcement Collaborative Framework with Conversational Natural Language Interfaces.* Accepted at Frontiers in AI.
* Yuqian Wu, first author, *A Two-Step Deep Embedding Technique for Efficient Categorical Feature Learning in Recommender System*, (Manuscript No.: VNA7JJANLG). Accepted at ICCEA 2024.

**ACADEMIC PROJECTS**

**2024 Guangdong Provincial Pinnacle Project**

**Multi-Agent Teaching Community System Based on Reinforcement Learning**

*Project Applicant & Team Leader*  **01/2024-Present**

* Tasked with establishing project goals, defining the scope and expected results, and submitting applications for research funding;
* Proposed the design concept of a multi-agent teaching community system based on reinforcement learning, consisting primarily of the construction of teacher agents, a multi-agent management framework, and a reinforcement learning pipeline (RLHF) built around agents;
* Utilized the multi-agent platform PADE and the team-designed CNO-Former (a Transformer model incorporating a chaotic neural oscillator mechanism) for experimentation through offline reinforcement learning and RLHF, thereby validating the system's feasibility.

**MAS4POI: a Multi-Agents Collaboration System for Next POI Recommendation**

*Final Year Project* **06/2024-Present**

* Proposed a novel LLM-based multi-agent system (MAS4POI) specifically designed for the next POI recommendation, demonstrating its flexibility to extend beyond POI recommendations to applications like navigation and real-time question answering;
* Achieved state-of-the-art performance on two large-scale, real-world datasets (NYC, TKY), with Acc@1 scores of 0.7730 and 0.7643, and MRR scores of 0.8153 and 0.7833, respectively.
* This paper has been accepted to PAKDD 2025(Oral), with me as the first auther;

**Co-Learning for Multi-Agent Reinforcement Collaborative Framework with Conversational Natural Language Interfaces**

* Proposed a Multi-Agent framework called Code Learning (Co-Learning) community, which created environmentally reinforced learning (E-RL) module to dynamically adjust and select the suitable LLM based on different programming tasks and beginners' requirements;
* Designed self-replication agents responsible for functions such as code correction, code generation, code interpretation, and information transmission.
* This paper has been submitted to Frontiers in AI (IF=3.0), with me as the joint first auther;

**UIC MRI Medical Image Group**

*Team Member* **03/2024-Present**

* Focused on Multi-Instance Learning (MIL) and class imbalance issues, integrating multimodal assessment of genes and images;
* Enhanced TransMIL, DSMIL, and ABMIL models for medical image (WSI) classification, validating their accuracy under class imbalance and diagnostic effectiveness through multimodal fusion.

**COMPETITIONS 2024 Chinese Collegiate Computing Competition (4C)**

* Incorporated the Lee oscillator into the scaled dot-product attention, designing the *CNO-Former: A Text Generation Model Based on Chaotic Neural Oscillation Self-Attention Mechanism* to reduce information loss caused by sparse attention in long sequences;
* Won the National Second Prize in this competition.

**HONORS**

* Guangdong Medical Valley Scholarship in the 2024-2025 Academic Year **12/2024**
* Excellent Award (The Second Computer Science Related Poster Exhibition)  **10/2024**
* UIC Second Class Award (Each Year)  **2021-2023**
* President’s Honour Roll (Each Semester) **2021-2023**