Ran Li

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Education

Northern Arizona University **Flagstaff, Arizona**

Bachelor of Science — Major: Computer Science & Mathematics *Sept 2018 - May 2022*

- GPA: 3.73/4.0 (Cum Laude)
- Teaching Assistant: Calculus I, Calculus II, Calculus III, Discrete Mathematics, Introduction to Numerical Analysis, Differential Equations, Introduction to Computer Science II, Data Structure (Sept 2020 – May 2022)

Publication

Weize Chen*, Ziming You*, **Ran Li***, Yitong Guan*, Cheng Yang, Chenyang Zhao, Chen Qian, Ruobing Xie, Zhiyuan Liu, Maosong Sun.
IoA: Linking Collaborative Agent Efforts with the Internet of Agents.
arXiv preprint, July 2024

Xin Li*, Weize Chen*, Qizhi Chu, Haopeng Li, Zhaojun Sun, **Ran Li**, Chen Qian, Yiwei Wei, Chuan Shi, Zhiyuan Liu, Maosong Sun, Cheng Yang.
Can Large Language Models Analyze Graphs like Professionals? A Benchmark and Dataset.
Submitted to NeurIPS 2024, under review

Research Experience

Internet of Agents **Beijing**

Supervisor: Professor Zhiyuan Liu, THUNLP Lab, Tsinghua University *Nov 2023 – Present*

- Conducted research on LLM-based multi-agent systems, significantly contributing to the development of the Internet of Agents (IoA) framework and co-authoring the paper "Internet of Agents: Weaving a Web of Heterogeneous Agents for Collaborative Intelligence."
- Contributed to propose and implement dynamic team formation mechanism for agents in the IoA framework, developed a benchmark to verify the robustness of this mechanism.
- Tested the GAIA benchmark validation set using the IoA framework, achieving SOTA scores on GPT-4 Turbo, processed the results for SFT data to model training.

Benchmark of GraphPro and Datasets of LLM4Graph **Beijing**

Supervisor: Professor Zhiyuan Liu, Professor Cheng Yang, THUNLP Lab, Tsinghua University *March 2024 – May 2024*

- Conducted research on benchmark and dataset of LLM4Graph and GraphPro, co-authoring the paper "Can Large Language Models Analyze Graphs like Professionals? A Benchmark and Dataset."
- Proposed a dataset pipeline using RAG with documentation datasets to enhance closed-source models and generated question-code pairs with back instruction and CoT for instruction tuning of open-source models.

Performance Optimization of PyBioNetFit Library using Julia **Flagstaff, Arizona**

Supervisor: Professor Ye Chen, Professor Richard Posner, Northern Arizona University *Jan 2022 – Dec 2022*

- Combined Python and Julia to enhance the performance of the PyBioNetFit library, resulting in a 60% reduction in runtime for large-scale biological network simulations by leveraging Julia's computational efficiency.
- Utilized parallelized differential evolution and scatter search algorithms and adaptive MCMC for parameter optimization and uncertainty quantification, improving the robustness and accuracy of biological network model predictions.

COVID-19 Prediction Based on MCMC **Flagstaff, Arizona**

Supervisor: Professor Ye Chen, Professor Richard Posner, Northern Arizona University *Sept 2021 – Jan 2022*

- Utilized adaptive MCMC model to train the pre-processed daily COVID-19 dataset, achieving an 87.6% prediction accuracy.
- Configured a cold start by tuning model parameters on a small local dataset, reducing initial error by 25%.
- Transferred optimized hyperparameters from the small model to a larger model with 20,000 data points to accelerate convergence by around 25% and reduce search time by around 40%.

Wrok Experience

Beijing Century TAL Education Technology Co., Ltd. **Beijing, China**

Internship *May 2023 - Aug2023*

- Tested RTC (Real-Time Communication) functionalities for project SDK iterations, increasing test coverage by 20%, and designed over 100 corresponding test cases using JIRA.
- Organized the C++ backend code logic for audio/video live streaming transmission processes.
- Implemented smoke test automation with Selenium to evaluate video quality and audio 3A algorithms using RTC transmission, cutting manual testing time by 50%.

Honours and Awards

Northern Arizona University **Flagstaff, Arizona**

- Dean's Honor List, the College of Engineering, Informatics, and Applied Sciences of NAU 2020 - 2021
- Gold Axe Award Nominee 2nd Place, Department of Mathematics and Statistics, NAU Apr 2022

Technical Skills

Languages: Python, Java, C++, JavaScript, Julia, PHP, R
Deep Learning Toolkits: Pytorch, Jax, NumPy, Scikit-learn, OpenAI gym
Developer Tools: Docker, GitHub, Hugging Face, Shell, Linux, LaTeX