Peihong Dai

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RESEARCH INTERESTS

Machine Learning, Graph Representation Learning, Large Language Model

EDUCATION

Beihang University **Beijing, China**
B.Eng. in *Computer Science and Technology* *Sept.2020 - Present*

- **Cumulative GPA**: 3.73/4.00
- **Weighted Average Score**: 90.22/100
- **Thesis Title**: Research on Learning Resource Recommendation Algorithm Based on Large Language Model
- **Related Courses**: Discrete Mathematics, Data Structure and Programming, Computer Organization, Operating Systems, Python Programming, Mathematical Modeling, Principles of Database Systems, Algorithm Design and Analysis, Optimization in Computer Engineering, Concrete Mathematics, Formal Language and Automata, C Language System and Programming, Compiler Technology, Software Engineering, Computer Network

PUBLICATIONS

Conference Papers

- Peng, T., Dai, P.(2024). Research on Learning Resource Recommendation Algorithm Based on Large Language Model, (manuscript in preparation)

ACADEMIC EXPERIENCE

State Key Laboratory of Software Development Environment **Beijing, China**
Research Assistant *Sep.2023 - Present*

- Supervisor: Prof. Wenjun Wu
- Conducted a research of recommendation systems and LLMs finetuning methods.
- Performed data cleaning for MOOCCubeX to create formatted input.
- Designed a prompt for Llama2 to generate desired formatted output.
- Running further tests on SOTA RS-GNNs as baselines to design a GNN of better performance on MOOCCubeX dataset.

Beihang Educational Informatics Research Center **Beijing, China**
Research Assistant *Mar.2023 - Jul.2023*

- Supervisor: Prof. Wenge Rong
- Conducted a research of undefined behaviours on the International Standard of C.
- Participated in a GitHub project that clarifies each undefined behaviour with examples.
- Assisted in teaching C Language System and Programming Course, a step to reforming the teaching of C in China.

PROFESSIONAL EXPERIENCE

Beihang System Architecture Institute **Beijing, China**
Research Intern *Aug.2022 - Nov.2022*

- Supervisor: Prof. Lei Wang
- Conducted a few researches on type-1 virtualization and SOTA products.
- Assisted in the maintenance and optimization on Rust-Shyper, a type-1 hypervisor that monitors multiple Linux-VMs.
- Participated in using Rust-Shyper to control ROS-robot by modifying ivshmem mechanism for communication and transferring real-time nodes to RTVM.

PROJECTS

Learning Resource Recommendation System Based on LLM **Graduation Project**
Developer *Oct.2023 - Present*

- Developing a learning resource recommendation system based on user history information. Using LLM such as Llama2 for data enhancement to identify users' preference and a GNN to sort out the intrinsic graphic structure of the user-item network, hence producing more accurate result. Operating on MOOCCubeX dataset.

Web-based Take-out Community Platform **Principles of Database Systems Course**
Developer *Oct.2022 - Dec.2022*

- Developed a fully-functional, feature-rich take-out ordering, scheduling and grading platform for multiple user, courier and restaurant entities. Using MySQL and Django framework for database and backend development.

Simple-C Compiler **Compiler Technology Course**
Developer *Oct.2022 - Dec.2022*

- Developed a compiler that takes in programming code which satisfy a simpler version of C, and generates optimized MIPS assembly code. Using C programming language.

Prediction Model Based on Portfolio Optimization **Mathematical Contest In Modeling**
Developer *Feb.2022*

- Developed a model that takes in history prices to predict future price and adjust current portfolio. Using ARIMA and LSTM network for prediction, and DP for optimization. Achieving desirable result and a Meritorious winner.

Simple-MIPS CPU **Computer Organization Course**
Developer *Sep.2021 - Dec.2021*

- Developed a pipelined CPU that executes binary codes as a simpler version of MIPS assembly codes. Using verilog language.

HONOURS & AWARDS

22' Meritorious Winner of Mathematical Contest In Modeling, COMAP
21' Outstanding Student of Academic Records, 2020-2021, Beihang University
21' Special-Grade Scholarship of Academic Excellence, 2020-2021, Beihang University
21' First-Grade Scholarship of Academic Competitions, 2020-2021, Beihang University
21' Second Prize in the 13th National University Mathematics Competition, Chinese Mathematics Society
21' Second Prize in the 37th National Partial Regional University Physics Competition, Beijing Physical Society
20' First Prize in the 2020 "FLTRP-ETIC" Cup English Writing Contest, Beijing Municipal Education Commission

ENGLISH & GRE TESTS

TOEFL iBT: 113 (overall score)
Listening: 30 — Reading: 29
Speaking: 24 — Writing: 30
Test date: May.2023

GRE General Test: 325
Quant: 170 — Verbal: 155
Analytical writing: 3.5
Test date: Oct.2023

TECHNICAL STRENGTH

- **Proficiency:** C, Python, LaTeX, Verilog, MIPS assembly
- **Prior Experience:** C++, Java, MySQL, Rust