Hu Chen

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EDUCATION

Shandong University, Jinan, P.R.China September 2021 - Present
Master of Science in Data Science Expected: June 2024
GPA: 88.46/100

Shandong University, Jinan, P.R.China September 2017 - June 2021
Bachelor of Science in Mathematics and Applied Mathematicse
GPA: 88.39/100

RESEARCH EXPERIENCE

SDU Data Science Institude February 2023 - Present
Worked on *Drug Target Interaction*

- Predicted binding affinity of protein and ligand pairs by using isolated 3D structures of ligands and proteins rather than complex structures that are difficult to obtain, which expanded its generalizability to many larger benchmarks.
- Contributed to the project by designing GNNs for better capturing interaction between ligands and proteins, and incorporating isolated structure properly.
- Evaluated the robustness and generality of different methods by conducting rigorous experiments under different strategies for splitting datasets.

INDUSTRY EXPERIENCE

Zhejiang Lab August 2022 - January 2023
Intern, Graph Computation Center

- Contributed to the Large-Scale Challenge (OGB-LSC), a graph machine learning competition, to predict HOMO-LUMO gap property of molecules on the quantum chemistry dataset PCQM4Mv2 with three colleagues.
  - Designed and implemented a hybrid graph neural network (GNN) model that incorporated both 2D topological structure and 3D conformation information into message passing.
  - Achieved efficient training on about 3 million molecules using PyTorch Distributed Data Parallel (DDP) and ranked 11th on the final leaderboard with only 24 hours of training time.
- Built a medical knowledge graph that contained entities such as drugs, proteins, gene ontology, diseases and their relationships using various data sources and extraction methods.

Huawei Technologies Co., Ltd. March 2021 - June 2021
Intern, Theory Lab

- Developed a novel graph algorithm based on linear algebra to find the k-Core of a graph, which is the largest subgraph where every node has degree at least k.
- Implemented the algorithm using CUDA on GPU and optimized its performance using various techniques such as atomic operation and shared memory usage.
- Outperformed baselines provided by 2 to 4 times on several real-world graphs with different sizes and densities.

PROJECTS EXPERIENCE

KuiperInfer as a contributor March 2023 - Present

- Collaborated with a team of developers to create a custom-built deep learning inference framework using C++17 from scratch.
- Implemented various features such as model loading, computation graph construction and execution.

HPC for graphs with Dr. Guanghui Wang July 2021 - October 2021

- Designed efficient graph algorithms to find and count cycles in graphs under constrained conditions such as cycle length and edge weight.

- Used breadth-first search (BFS) and queue techniques to store potential paths that make up the cycle and optimized them with OpenMP parallel library in C++.
- Achieved expected performance and completed the acceptance test of the cooperative company.

TEACHING EXPERIENCE

SDU Linear Algebra, *Teaching Assistant* — Spring 2023
SDU Calculus II, *Teaching Assistant* — Fall 2021

HONORS REWARDS

2022 SDU First Prize of Graduate Scholarship
2021 Third Prize of "Huawei Cup" The 18th China Post-Graduate Mathematical Contest in Modeling
2021 Excellent Graduate of Shandong Province
2020,2019,2018 SDU Third Prize of Undergraduate Scholarship
2019,2018 Third Prize in the 9th National College Student Mathematics Competition

COMPUTER SKILLS

Programming: Python, C++, CUDA
Frameworks: Pytorch
Tools: Linux, VScode, Git, Github