

Qian_Jiang

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Address: Huizhou City, Guangdong Province



Educational Experience/Awards Received

Education: 2023.9-2024.9 Northeastern University Materials Science and Technology
2024.9-now Northeastern University Computer Science and Technology

Level of Study: 4.33 GPA (1/196, 0.5%)

Awards: 2nd Class Teaching Grant, 3rd Class Teaching Grant

Selected courses: Advanced Mathematics I 99 Advanced Mathematics II 99

Optimization Theory 97 C++ Programming 97 Data Structures 94

Probability Theory and Mathematical Statistics 100

Personal Link

zhihu: <https://www.zhihu.com/people/bu-neng-yao-gong/posts>

Github: <https://github.com/PbRQianJiang>

Academic Homepage: <https://pbrqianjiang.github.io/>

Project/Research Experience

(Current research projects will be published after submission)

2024.1.4~2024.1.9

Urban road traffic network planning based on Prim algorithm and Kruskal algorithm

Project Description: In urban transportation planning, we need to build a communication network so that n cities can communicate with each other, and the total communication line cost is the lowest. This problem can be abstracted as the problem of finding the minimum spanning tree in an undirected connected network. The minimum spanning tree is the one that contains all the vertices and the sum of the weights of the edges is the smallest. My task was to develop a system that could receive input data describing the urban transport network, construct a minimum spanning tree using the Prim algorithm and the Kruskal algorithm, respectively, and use priority queues and look-up sets. and output the cost of the minimum spanning tree and the edges of the spanning tree. Finally, out of curiosity, I conducted a comparative time experiment analysis between the optimization algorithm and the original algorithm using priority queue and check union, and found that not the optimized algorithm was superior to the original algorithm in

all data sizes, and provided an idea for analyzing the efficiency of the algorithm and analyzing the algorithm selection of different data sizes. In the end, it was highly affirmed by the course teacher and received the highest A-level evaluation.

2024.5.1~2024.5.5

Development of word management system (java curriculum) based on the Eclipse platform

Project Description: Combined with the knowledge learned in the course, as a team leader, through reasonable work assignment communication, cooperate with another team member to develop a word management department system, only two people completed the normal group course design of 4-5 people, through the visual GUI page, to achieve the way of file flow Delete, check, change words, and realize the sorting of words according to different needs (such as date, difficulty), and can be realized through user input through the listener to judge whether the words are correct and make different responses, through generics and exception throwing to improve the robustness of the program, the defense of the answer flow smoothly, the final course score is 99 points

个人技能

- **Deep learning:** Familiar with neural networks, convolutional pooling, transformer attention mechanism, basic principles of mainstream multimodal models (CLIP BLIP LLAVA), concepts such as deep learning loss function, overfitting, gradient descent, back propagation, activation function, etc.
- **Mathematical knowledge:** Proficiency in advanced mathematics, linear algebra, probability theory and mathematical statistics, univariate and multivariate calculus, differential equations, infinite series, limits, matrix operations and derivatives, rank and linear correlation, Bayesian probability, maximum likelihood estimation, etc., and knowledge related to optimization theory, including spatial knowledge such as range space, one-dimensional search, steepest descent, quasi-Newton method, Lagrange interpolation method, etc.
- **C++:** Master loops and their nested structures, and be able to flexibly use arrays, pointers, pointer arrays, array pointers, etc.; be relatively proficient in the knowledge of structures, functions, and objects; understand and use special functions such as default functions and friend functions
- **Java:** Master the basic classes, objects, and methods, and be proficient in visual GUI pages to build relatively beautiful pages, including but not limited to pop-up lists corresponding to available monitors, understand and use exception throwing to improve robustness

•**Python:** Master the basic classes, objects, and functions, which are mainly used to call related packages in deep learning, understand the use of related special methods such as dictionaries and tuples, and master the reading and writing of csv, json, jsonl and other files.

•**英语:** CET4 579/710

Self-evaluation & development expectations

Currently, I am interested in multimodality (voice mode) and trusted artificial intelligence (jailbreaking). If there are any potential academic cooperation opportunities or doctoral positions, you are very welcome to contact me. I enjoy the exciting inspiration brought by research and look forward to making exciting contributions and achievements in my own small research field. In addition, I love nature and freedom, like to keep trying things that interest me, and am interested in traveling, photography, guitar, badminton, etc. I hope to go out into the world, explore a lifestyle that belongs to me, and pursue a very chill lifestyle.