THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY
Department of Computer Science and Engineering
MFIT5004: Financial Data Mining
Spring 2024: Assignment 2
Due time and date: 11:59pm, Mar 12, 2024.

IMPORTANT NOTES

1. **Your grade will be based on the correctness and clarity.**

2. **Late submission: 25 marks will be deducted for every 24 hours after the deadline.**

In this assignment, we use a financial sentiment classification dataset (samples.txt) from Huggingface Datasets.[1]
Each sentence has a label indicating whether the sentence's sentiment is "positive", "negative" or "neutral".

Q1. Use a LLM model to perform sentiment analysis on these samples.

- You are encouraged to use a financial LLM, such as

    - FinGPT (to run, use the python code fingpt.py from canvas);
    - PIXIU (or FinMA);
    - InvestLM.

- However, your machine may not be powerful enough to run these finLLMs. If that is the case, you may use a general LLM, such as GPT-3.5 from HKUST API.

Use the following prompt:

What is the sentiment of this tweet? Please choose an answer from negative/neutral/positive.

Q2. The above prompt is simple and the accuracy obtained may not be satisfactory. Design a better prompt and compare its performance (classification accuracy) with the basic prompt in **Q1**. You can get inspirations on prompt design from the following papers [1, 2, 3].

References

[1] Xiaofei Sun, Xiaoya Li, Jiwei Li, Fei Wu, Shangwei Guo, Tianwei Zhang, and Guoyin Wang. Text classification via large language models. In *Conference on Empirical Methods in Natural Language Processing*, 2023.

[2] Jason Wei, Xuezhi Wang, Dale Schuurmans, Maarten Bosma, brian ichter, Fei Xia, Ed Chi, Quoc V Le, and Denny Zhou. Chain-of-thought prompting elicits reasoning in large language models. In *Advances in Neural Information Processing Systems*, 2022.

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[1] https://huggingface.co/datasets/zeroshot/twitter-financial-news-sentiment

[3] Huaixiu Steven Zheng, Swaroop Mishra, Xinyun Chen, Heng-Tze Cheng, Ed H. Chi, Quoc V Le, and Denny Zhou. Step-back prompting enables reasoning via abstraction in large language models. In *The Twelfth International Conference on Learning Representations*, 2024.

Submission Guidelines

Please submit a report (in PDF format) to describe your prompts, the classification results and accuracy using these prompts. Name your report in the format **YourStudentID_assignment2.pdf** (e.g., 12345678_assignment2.pdf) and upload it to Canvas. **Plagiarism will lead to zero point on this assignment**.