**Prompt Engineering**

Student's Name

Institutional Affiliation

Course

Professor's Name

Date

**Prompt Engineering**

Large language models, including the ChatGPT, lasted comparatively less time and only enhanced the efficiency of natural language processing. This inspired the formation of further advanced and captivating applications in text generation. However, they need to gain knowledge in mathematics to solve problems or to develop algorithms into programming languages. Such restriction is essential, particularly when precision forms the bulk of the curbing base, such as teaching, statistics or software engineering disciplines. This paper aims to analyze how the given style of the prompt might help to develop the formula manipulation and code production skills of the LLMs based on the answers to various prompt styles.

The study aims to addresses vital hypotheses: Is using LLMs more effective when the math problem posed is written in ordinary language rather than numeric or symbolic, and do these descriptions enhance the resultant code? The answers to these questions are essential because the efficiency of LLMs may influence their use in technical disciplines. This work aims to improve prompt engineering outcomes for important areas by establishing the performance relationship between different prompts.

This paper is relevant because the results from this study show that low-achieving LLMs could be poor in mathematical computation and may write syntactically incorrect code. Such observations suggest that enhancing the structures of these different types of prompts can help eliminate some of these defects, hence enhancing the reliability of LLM. Moreover, as described earlier, LLMs are becoming almost mandatory to accomplish numerous activities and transform them into various tools for professionals and students; it is necessary to be aware of these systems' applicable strengths and weaknesses in solving technical problems.

In this experiment, low-level machine translations will be compared based on the accuracy, response time, and coherence of various formats of prompts. The collected results improve the prompting and enhance users' knowledge of the LLM delivery and demerits in technological fields.

# References

1. Ayad, S., & Alsayoud, F. (2024). Prompt engineering techniques for semantic enhancement in business process models. *Business Process Management Journal*. <https://doi.org/10.1108/bpmj-02-2024-0108>
2. Boubdir, M., Kim, E., Ermis, B., Fadaee, M., & Hooker, S. (2023). *Which Prompts Make The Difference? Data Prioritization For Efficient Human LLM Evaluation*. ArXiv.org. <https://arxiv.org/abs/2310.14424>
3. Hadi, M. U., Tashi, Q. A., Shah, A., Qureshi, R., Muneer, A., Irfan, M., Zafar, A., Shaikh, M. B., Akhtar, N., Wu, J., Mirjalili, S., & Shah, M. (2024). *Large Language Models: A Comprehensive Survey of its Applications, Challenges, Limitations, and Future Prospects*. <https://doi.org/10.36227/techrxiv.23589741.v6>
4. Li, Q., Fu, L., Zhang, W., Chen, X., Yu, J., Xia, W., Zhang, W., Tang, R., & Yu, Y. (2023). *Adapting Large Language Models for Education: Foundational Capabilities, Potentials, and Challenges*. ArXiv.org. <https://arxiv.org/abs/2401.08664>
5. Mansourian, A., & Oucheikh, R. (2024). ChatGeoAI: Enabling Geospatial Analysis for Public through Natural Language, with Large Language Models. *ISPRS International Journal of Geo-Information*, *13*(10), 348. https://doi.org/10.3390/ijgi13100348