Practical Applications of Large Language Models in Mining

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ABSTRACT

Large language models (LLMs) have generated a lot of hype since ChatGPT was released in early 2023. In essence, they allow people to interact with computer systems through natural language and have the ability to generate highly complex text, images and videos.

It is clear that this technology has significant potential, however most mining companies have not yet found practical applications for it within their operations.

In this paper, we present a range of such applications along with the tactical considerations associated with developing and implementing them. We have identified use cases across a variety of operational and functional areas within the mining industry and evaluated them based on their potential business value and ease of implementation.

Firstly, we provide an overview of how LLMs work and a review of how LLMs are being applied in other industries to provide best practice inspiration for Mining.

Next, we present a list of possible applications in Mining and a critical assessment of each use case. This section also includes a technical deep dive into the different methodologies for developing the technologies as well as an analysis of barriers to adoption within Mining organisations.

Finally, we share a discussion of the potential path forward for LLMs in Mining and the impact they could have on the industry. We analyse the potential differences between early adopters and laggards in the artificial intelligence space.

This research draws on interviews and surveys with Artificial Intelligence experts as well as Mining subject matter experts to connect cutting edge thought leadership with the specific problems faced by our industry.