University of Exeter Business School

BEEM062 Technical Assignment B

Question 3 "AI and the Blockchain"

April 2024

Q3.1 Explain what ChatGPT is, and what effects it may have in the future

ChatGPT is a large language model (LLM) chatbot which is driven by generative artificial intelligence (AI) that allows users to have human-like conversations to complete tasks (Ortiz, 2024). Generative AI describes algorithms that can be used to create new content such as images, code, and text (McKinsey & Company, 2024). Released at the end of November 2022 (OpenAI, 2022) the chatbot, like many other AI has been trained on a vast amount of data (Nield, 2023). The tuning process employed to help it improve is called Reinforcement learning with Human Feedback (RLHF), where the chatbot learns from examples given by humans to produce responses that will be helpful for users (Abideen, 2023).

The increasing popularity of ChatGPT means that it is poised to drastically impact various sectors. The chatbots ability to process data and generate human-like text means that the impact it will have on the future is vast. Some of the areas it will affect include but are not limited to education and content creation.

Educational applications: ChatGPT's adoption in the educational sector is helping to transform learning by offering personalised explanations which can be used to support learners across a vast range of subjects (Gil, 2023). Some of the ways in which it will be applied in the future to help bridge the gap in educational equity are through virtual tutoring, language learning, exam preparation and writing assistance (Digital Learning Institute, 2023). This tool helps to explain complicated concepts to students by adapting each explanation to a students individual learning needs making it an incredibly powerful tool for enhancing education. However, the use of ChatGPT must be used carefully for it to not become a crutch for students. Overall, it is important for students to fully utilise the chatbots benefits while also recognising that is cannot substitute hard work and studying.

Content creation: The use of ChatGPT in content creation will allow for a high level of improvement by providing support for a wide range of content formats and enhancing productivity. In the future ChatGPT's use in the content creation process will be able to cut down time and reduce writers block (Venditti, 2023) making creators more efficient. However, the use of this tool in the future of content creation must be done carefully, this is because of the potential for bias in content that is created by the chatbot, it is important to make sure that the content is thoroughly reviewed to ensure that the content is appropriate

(Welance, 2023). The future use of AI in this field will also bring forward questions relating to the accuracy and quality of information that is being generated. It is important for there to be human oversight to avoid any misinformation being generated and forwarded. Additionally, it is also important that the use of AI tools like ChatGPT is acknowledged to promote transparency in the use of these and foster an ethical digital environment.

In conclusion, ChatGPT is set to have a profound and enduring impact on the future of multiple sectors. The two sectors covered here are just the tip of the iceberg. Through the tools ability to interact like a human and provide individual responses, ChatGPT will transform every sector that it is utilised in. As the chatbot continues to change, the use of the tool must be done so with careful consideration the benefits and ethical considerations. By doing this, it will be possible to ensure that ChatGPT enhances user capabilities without compromising the integrity of any of the sectors it is employed in.

Q3.2. To what extent do you think Blockchain technology could provide a solution to any systemic problems coming from AI?

Blockchain technology provides a promising solution to several systemic issues that are coming from AI. With blockchains key characteristics being transparency, decentralisation, and security, it holds the potential to address these challenges.

Transparency

Blockchains inherent feature of transparency is crucial for AI applications in industries with vigorous regulations such as finance, healthcare, and cybersecurity. Each transaction on a blockchain is recorded in a tamper-proof ledger (IBM, 2021) which guarantees that changes made to data or AI models is permanently logged. By doing this transparency is increased and helps to tackle the issue of compliance and governance with AI. This feature allows stakeholders to verify the actions made by AI systems, providing a clear trail (Huckle & White, 2017).

Decentralisation

Blockchains decentralised nature addresses one of the largest risks surrounding AI, highly centralised AI data repositories (Thompson, 2023). These centralised systems are problematic as they are controlled by a small number of organisations where there are no methods of sharing data (Rodriguez, 2019). By employing the use of blockchain, data and processing can be distributed across a decentralised network which will improve system resilience and reduce the risk of centralised control. Research has already found that there is a preference for public blockchains as they are governed by the community and not a central authority (Kennedy, 2023). Additionally, the decentralisation will prevent data monopolies while also improving the security of AI systems as the data will be distributed across multiple nodes (Salah et al., 2018).

Data security

By incorporating blockchain into AI systems, the level of data privacy and security can be greatly increased. Blockchains use of cryptographic techniques allow for data exchange across networks to be protected against unauthorised access (Lake, 2019). Additionally, blockchain solutions also allow organisations to collaborate in ways that were previously not available as they are able to share data between each other in a secure fashion (Heister & Yuthas, 2021). Blockchains immutable ledger plays a key role in addressing systemic issues

like bias in AI applications. The permanent record of all data transactions, blockchain ensures that the data inputs used within each AI model is transparent while also being kept secure.

While blockchain offers a vast range of solutions to systemic issues surrounding AI, it also poses several challenges when looking at the computational efficiency and scalability. Blockchain networks that use Proof of Work mechanisms can suffer from limited transaction processing which could potentially hinder large AI applications (Geroni, 2021). The use of these technologies requires a balance of the benefits of decentralisation, security and transparency with the performance demands of AI applications.

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References for Question 3.2

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