

3. AI and the Blockchain

3.1 Introduction of ChatGPT and its Future Effects

3.1.1 What is ChatGPT?

ChatGPT, a chatbot launched in November 2022 by Open AI, an American AI Laboratory. It is developed to comprehend human language and provide responses that mimic natural conversational patterns based on the prompts. This chatbot can answer various questions across diverse industries, including writing code, generating lyrics, writing emails, and providing legal advice. With its human-like conversation and high accuracy responses, ChatGPT hit 100 million users within two months of launch (Duarte, 2024).

ChatGPT operates on GPT (Generative Pre-trained Transformer) model, which is a series of Large Language Models (LLMs) used to handle natural language processing (NLP) tasks (Latterner, 2023). The chatbot currently deploys GPT-3.5 and GPT-4. While GPT-3.5 is freely accessible, more advanced GPT-4 and other features such as DALL-E 3 and DAN are available through the paid "ChatGPT Plus" subscription. ChatGPT Plus provides quicker response, access during peak periods, and exclusive access to premium features like GPT-4, generating images from text, or speaking to the chatbot (Baker, 2023).

ChatGPT works by utilising algorithms to analyse input prompts and predicts each possible word to generate coherent and contextually relevant responses based on learned patterns (Ramponi, 2022). It was trained through a process that involved two main phases: pre-training and fine-tuning. During its initial training, ChatGPT learned from a massive corpus of text data in an unsupervised manner. Techniques such as language modelling and masked language modelling were deployed to train the chatbot how to predict the next word in a sentence based on the context provided by the preceding words. Followed by the fine-tuning process, ChatGPT was further developed on specific tasks or datasets using supervised learning techniques. This process involved providing the model with labelled data related to the task it was being trained for, such as question-answering or text generation, and adjusting its parameters iteratively to enhance performance on that task (Radford et al., 2018).

3.1.2 Future Effects

Technological innovations like ChatGPT have always been a double-edged sword, offering benefits while also posing negative effects.

In education, ChatGPT serves as a study tool that provides students with personalised tutoring, instant support, and writing assistance. It can adjust to different learning styles, making education more accessible and engaging. However, rather than using it as intended

for assistance, many students misuse ChatGPT to complete assignments and virtual exams. The overdependence on ChatGPT undermines students' ability to research, critical thinking, and solve problems independently. This not only compromises academic integrity but also deprives students of the opportunity to hone their cognitive skills.

In workplace, integration of ChatGPT offers various benefits, including the automation of repetitive tasks, increased job productivity, and streamlined business operations. Moreover, as technology evolves, it may create new job opportunities, requiring the workers to upskill and reskill to adapt to these emerging roles. However, alongside these opportunities come disruptions to certain job roles. For instance, ChatGPT's ability to write code could impact employment prospects for developers. As ChatGPT possesses coding skills and is often more cost-effective to employ than human workers, there is a risk of increased unemployment in these sectors.

Instead of banning it outright, ChatGPT should be cautiously adopted as an assistance tool rather than a substitute for essential skills, ensuring it enhances productivity and learning without hindering critical thinking and problem-solving abilities.

3.2 Blockchain's Role in Addressing AI's Systemic Problems

Blockchain holds significant potential to address systemic problems arising from AI. AI systems are increasingly adopted by organizations for important decisions, such as determining health diagnoses, sentencing in legal proceedings, and evaluating job applications (Peter, 2023). However, many AI systems employed in the operation are opaque. This is contributed to by the inner workings of AI, which are driven by algorithms obtained through machine learning. This autonomous learning process involves the AI analysing training data to identify correlations and patterns and adjusting its behaviours according to the feedback. Consequently, the decision-making processes of AI systems may not be easily interpretable to humans (Burell, 2016). Blockchain's decentralized and immutable ledger can enhance the transparency of decision-making in AI systems. Every transaction and update are documented on the blockchain, allowing stakeholders to trace and review the decision-making process. This transparency helps to identify any potential biases or discriminatory patterns present in AI systems, enabling stakeholders to overcome them effectively (Medium, 2024).

Moreover, blockchain can mitigate the risk of training data manipulation and tampering. It is essential to ensure that AI applications are not developed using discriminatory or illegal data by employing unbiased datasets and high-quality training data, particularly in critical applications such as finance or healthcare. Blockchain's decentralised and tamper-proof nature ensures secure transfer, verification, and storage of data. When data is stored on the

blockchain, it is broadcast to and stored by every node in the network. This ensures that all network participants have access to the same data, and it is impossible to modify or manipulate without their consensus. The adoption of blockchain for data integrity can help prevent attacks attempting to interfere with or manipulate the training dataset (Ramos & Ellul, 2024).

Furthermore, blockchain can overcome the data privacy concerns inherent in AI models. Generally, members such as researchers, digital innovation hubs, and testing experimentation facilities who are involved in the development of high-risk AI models will have access to use training datasets belong to their relevant fields of study. Hence, ensuring the secure sharing and storage of data becomes crucial when multiple parties are engaged in development of AI models. With blockchain's cryptographic techniques and distributed architecture, it can protect data when sharing among multiple parties, facilitating collaboration while upholding a certain level of data privacy. Additionally, by using blockchain, participants can keep control of their data, ensuring that no one can access to another participant's confidential data without permission granted. This can maintain the integrity of the training process and protect every participant's data privacy while still benefitting from the collective insights and knowledge through the collaborative AI training.

In conclusion, while blockchain provides solution to systemic challenges in AI, it should be leveraged with careful consideration of impacts in ethical, regulatory, and technical aspects. With thoughtful adoption, blockchain can shape a transparent, secure, and ethical AI ecosystem.