

AI and Blockchain with Reference to IPRs

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Abstract -- Artificial intelligence (AI) is a method of making a computer, a computer-controlled robot, or a software to think intelligently and mimic like the human mind. The last few years have seen many innovations and advancements previously in the realm of science fiction which slowly manifested into reality. It is machine learning technology that gives AI the ability to learn. This is done by using algorithms to discover patterns and generate insights from the data they are exposed to.

Recently, chatbots have caught significant attention. Microsoft and Google are in feverish race for supremacy. This paper examines implications of these new innovations engulfing us, where issues of copyright infringement are being tackled by leveraging blockchain technology.

Keywords: Neural network, ChatGPT, Conversational Generative Pre-trained Transformer, Copyright infringement, Blockchain, Intellectual property rights

I. INTRODUCTION

MAIN buzz in 2023 is all about how different chatbots are making headlines as to how user queries are being fulfilled and delivering apt results to the end users. There are many examples where deployment of chatbots and Artificial intelligence (AI) based technologies are successful in streamlining customer services and thereby improving overall user experience. For the very first time, humans are witnessing integration of AI, chatbots, and blockchain which is leading to a new era of innovation and transformation across various industries. AI and chatbots provide the intelligence and conversational abilities needed to streamline mundane processes and enhance customer experience, while blockchain brings the benefits of decentralized and secure data management.

The branch of Artificial intelligence (AI), refers to the simulation of human intelligence in machines that are capable of performing tasks that typically require human cognition, such as learning, problem-solving, and decision-making capabilities. AI systems can be classified into various sub-disciplines, including machine learning, deep learning, computer vision, and natural language processing (NLP). On the other hand, chatbots are computer program modules designed to simulate conversation with human users, typically powered by AI and NLP technologies. They are typically used in customer service and support, providing quick and convenient assistance to users. Examples of chatbots include virtual assistants like Siri and Alexa, and customer service chatbots used by companies like banks and e-commerce websites.

Datasets generated during the conversation between the chatbots can be labelled for training of the Artificial intelligence (AI) modules. The training of AI datasets can be divided into two main types: *supervised* learning, where the AI algorithms are trained on labeled data to make predictions, and *unsupervised* learning, where the algorithms are trained on unlabeled data to discover patterns and relationships in the data.

II. ChatGPT

One such example of chatbot recently been discussed is ChatGPT which is a type of supervised learning. The ChatGPT model has been trained to predict the correct response given a specific prompt, which means it is trained in a supervised manner. ChatGPT stands for “Conversational Generative Pre-trained Transformer”. ChatGPT is a language model developed by OpenAI that uses a type of deep learning architecture called Transformer, which was introduced in the paper “Attention Is All You Need” (2017) [1]. Transformer networks are designed to handle sequential data, such as text, and have proven to be highly effective for a variety of natural language processing tasks. ChatGPT has been trained on vast amounts of text data and can generate human-like responses to various types of questions and prompts when asked by the user. ChatGPT is a type of chatbot having more *advanced* capabilities and a greater understanding of language compared to some traditional chatbots.

III. AI MODULES FOR ChatGPT

The modules of Artificial intelligence (AI) working for ChatGPT are:

- *Pre-training:* ChatGPT is pre-trained on large amounts of text data to learn patterns and relationships between words and phrases in various contexts.
- *Attention Mechanism:* The Transformer architecture used by ChatGPT employs an attention mechanism that allows the model to selectively focus on different parts of the input data when generating its responses.
- *Generative Modeling:* ChatGPT is a generative model, meaning it can generate new text that is similar in style and content to the input data it was trained on. This allows it to simulate human-like conversation and provide responses to a wide range of questions and prompts.
- *Fine-Tuning:* To adapt ChatGPT for specific tasks or domains, it can be fine-tuned on smaller, task-specific

datasets. This allows the model to learn the specifics of a particular domain, such as customer service or education, and generate more accurate and relevant responses.

United States Patent 11113602 [1] titled “Attention-based sequence transduction neural networks” was granted to Google LLC.

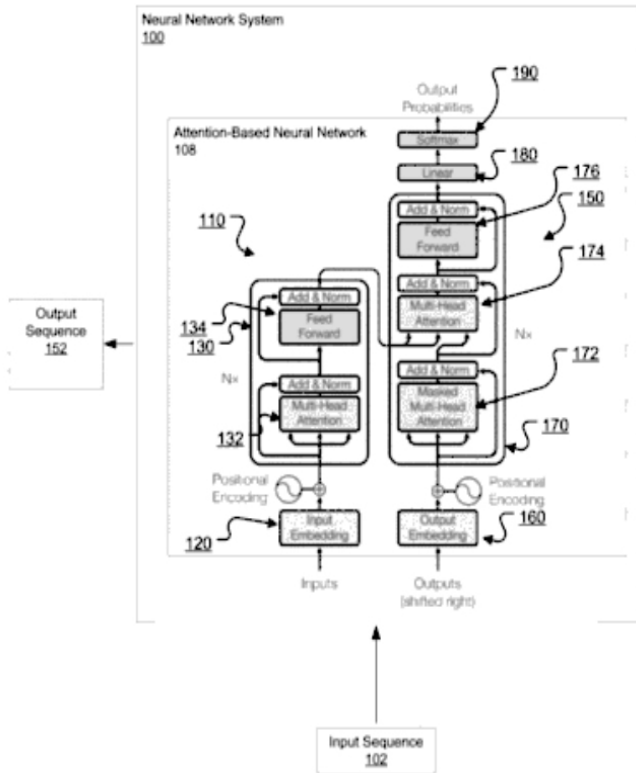
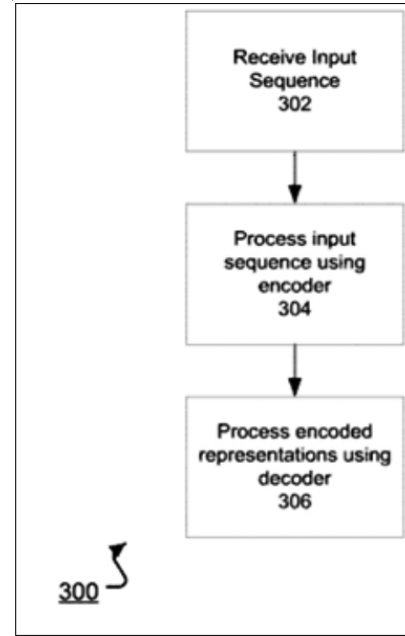


Figure 1.

The technology behind the patent describes a method for generating an output sequence from an input sequence. Moreover, the present system is a computer program that uses a neural network to convert an input sequence into an output sequence. In use, an encoder neural network is utilized to process the input sequence aka data. The neural network has two parts: an encoder that takes in the input sequence and generates a set of representations for each input, and a decoder that uses these representations to generate the output sequence.

Further, the encoder network is made up of one or more subnetworks, each of which receives a specific input and generates a specific output. These subnetworks also have a self-attention sub-layer that uses attention mechanisms to consider the input at each position and generate the final output sequence. The self-attention mechanism uses a query, keys, and values based on the input sequence to generate the outputs. In use, the sequence transduction neural network, equipped with an attention-based encoder and decoder, can either transduce



sequences faster or be trained more efficiently due to its ability to be easily parallelized. This is because the attention mechanism in the network allows for the identification of global dependencies between input and output, eliminating the need for recurrent neural network layers and their associated issues such as long training and inference times and high resource consumption.

However, one of the major disadvantages of Artificial intelligence (AI) from an Intellectual Property Rights (IPR) perspective is the issue of copyright infringement of AI-generated works. AI algorithms are capable of creating unique and original works such as music, artwork, and writing, but there is often a lack of clear legal frameworks to determine who owns the rights to these works. There are two types of rights [3] under copyright:

- *economic* rights, which allow the rights owner to derive financial reward from the use of their works by others; and
- *moral* rights, which protect the non-economic interests of the author.

In many jurisdictions, copyright laws were developed before the rise of AI, and as a result, they may not adequately address the ownership of AI-generated works.

In some cases, the AI algorithm itself may be considered the author of the work, making it difficult for human creators to assert their rights. This creates ambiguity and uncertainty for creators who want to use AI to generate new works and for those who want to license or sell AI-generated works. Additionally, AI algorithms can easily copy, modify, or use existing works without proper attribution or permission, leading to copyright

infringement. This further complicates the issue of determining ownership and responsibility for AI-generated works.

The issue of copyright infringement of AI-generated works is a significant disadvantage of AI from an IPR perspective, as it raises questions about ownership, responsibility, and protection of these works. However, the use of blockchain technology to record and verify ownership and provenance of AI-generated art, music, literature, or any other form of digital data content is feasible. By deploying blockchain framework, the ownership of the AI-generated work can be securely and transparently recorded and the work can be tracked and verified over time. This ensures that the creator of the AI-generated work can be fairly compensated for their work in terms of collecting royalty and the ownership IP rights can be protected in real time.

In a blockchain system, the ownership of the AI-generated work is recorded in a decentralized ledger, which eliminates the need for intermediaries and reduces the risk of fraud and tampering. The decentralized nature of the blockchain also allows for a secure and transparent marketplace for AI-generated works, enabling buyers and sellers to interact directly with each other. By utilizing smart contracts, the IP licensing deals and sale of AI-generated works can be automatically executed, reducing the risk of disputes and making the process more efficient. This also enables creators to receive fair compensation for their work, as all transactions are transparent and recorded on the blockchain.

In conclusion, blockchain technology has the potential to revolutionize the way AI-generated works are owned, licensed and sold, providing a secure and transparent platform for artists, creators and buyers to interact. The utilization of blockchain technology ensures that the ownership and provenance of AI-generated works are protected and that the creators receive fair compensation for their work.

REFEERENCES

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Advocate **Prity Khastgir** is a Registered Patent Attorney in India working in Cyber laws, Global Intellectual Property laws, international commercial mediator for commercial disputes, facilitating human capacity building for youth globally and active in working group of International telecommunication policies and advising conglomerates across seven continents to combat Cybercrime in online space with over 17 years of work experience. She is also Intellectual Property

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