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LEGAL FRONTIERS: PATENTING CHAT-GPT DRIVEN INNOVATIONS

AUTHORED BY - ANANDITA KESHRI

Abstract

ChatGPT, a creation of OpenAI, has garnered significant global attention for its ability to generate human-like text based on a large language model (LLM). Built using transformer architecture, this tool utilizes a neural network designed to function like the neurons of the human brain, enabling it to predict sequential text with accuracy. This artificial intelligence tool has sparked widespread discussion, particularly within the legal community, due to its user-friendly interface and implications for intellectual property rights. While traditionally, inventions have been constrained by the limits of human knowledge, the development of ChatGPT has ushered in a new era of AI-assisted inventions. This paper examines the patentability of inventions that incorporate ChatGPT as an inventive component and explores the varying approaches of different nations in addressing patent applications where ChatGPT is listed as component.

Keywords- Generative Pre-Trained Transformer (GPT), Patents, Inventions

INTRODUCTION

The human mind is a plethora of creativity, capable of reaching undiscovered extents, developing groundbreaking technologies, and pursuing unique endeavours. Among these innovations is artificial intelligence (AI), which has notably changed the landscape of modern invention. The rapid development and accessibility of artificial intelligence have dramatically transformed the inventive process, significantly reducing the time and effort required to generate groundbreaking ideas. What once demanded extensive research, brainstorming, and iteration can now be achieved in a fraction of the time, thanks to AI's ability to process vast amounts of information and generate innovative solutions almost instantaneously. This shift has made the creation of life-altering technologies and devices more attainable, bringing revolutionary ideas to the forefront with just a click.

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One such AI tool, ChatGPT, has had a significant impact on modern day inventions, problem-solving and communication. ChatGPT is a large language model (LLM)[1] designed to generate human-like responses to text-based queries, functioning much like a chatbot. It originates from the field of Natural Language Processing (NLP), where computers are trained to comprehend and respond to human language.

"GPT" stands for "Generative Pre-Trained Transformer," [2]a type of AI model that generates new outputs based on the inputs it receives. This model uses a neural network, which mimics the neurons in the human brain, learning context and meaning by analysing sequences of data over time.

Given its capabilities, technologies like ChatGPT hold great potential for innovation and industrial advancement. By analysing data and generating fresh ideas, these AI tools can drive progress in various fields. However, this potential also raises questions about the patentability of inventions derived from ChatGPT, highlighting the legal challenges associated with AI-generated innovations.

A patent is granted to an inventor if the invention meets specific legal requirements. These territorial rights are provided for a period of 20 years, during which the government grants the patent owner exclusive rights to make, manufacture, and market the invention. For an invention to be patentable, it must satisfy the following conditions in consonance with TRIPS Agreement:
Novelty: The invention must be new and dissimilar to other existing inventions. There should be no prior publication**.**
Inventive: The invention must be an inventive solution and a mere change in the form of prior use or knowledge is not enough.
Industrially Applicable: The invention must have industrial utility to allow its commercial use.
When an invention involves ChatGPT as a co-inventor or includes an AI component, the idea of getting a patent for such an invention becomes complex. Patentability grants the inventor the exclusive right to exploit the invention commercially and holds them accountable for any involvement of ChatGPT or AI in the invention process complicates these provisions, making

[1] *Large Language Models*, IBM, https://www.ibm.com/topics/large-language-models
[2] *ChatGPT and Intellectual Property (IP) Related Topics*, MONDAQ (Aug. 13, 2024), https://www.mondaq.com/unitedstates/patent/1301636/chatgpt-and-intellectual-property-ip-related-topics.

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the grant of patent more challenging.

This paper examines the patentability of recent technologies that have integrated GPT (Generative Pre-Trained Transformer) into their inventions. It also analyzes the approach of various countries including India, USA, China, Britain, Singapore and Japan, to assess the scope of patent grants for innovations.

UNDERSTANDING CHATGPT AS AN INVENTOR

AI is like a double- edged sword, it possesses the potential to create absolutely significantly changes like conducting surgeries. On the flip side it can also be unregulated and ungovernable. With technology changing every few days, AI has made possible various tasks which were only part of science fiction earlier. One of the most significant AI of modern times is ChatGPT, an advanced language model that uses deep learning techniques to produce human-like responses to natural language inputs.[3]

Open AI has developed this model as part of its generative pre-training transformer (GPT) family. ChatGPT provides responses to a wide variety of prompts using a vast corpus of text data. This allows it to capture the nuances and intricacies of human language.[4] ChatGPT is versatile and capable of tasks such as translations, text summarisations and drawing conclusions from the text. ChatGPT is characterized by an ability to learn, understand and analyze human natural language, allowing it to exhibit powerful anthropomorphic characteristics. ChatGPT is playing a major role in innovation ecosystem, it is expected to rise in the near future. The question is what is the patentability scope of these inventions?

For instance, in the field of Radiology AI has shown transformative potential, where ChatGPT has played an important role. With GPT's assistance radiology reports can be generated to save time. When ChatGPT was tasked to generate a patentable invention in the field of Gastrointestinal disorders, requesting "*Give me a novel patent topic about inflammatory bowel diseases."* It proposed "*A Novel Method for Diagnosing and Treating Inflammatory Bowel Diseases Using a Combination of Ultrasound Imaging and Microbiome Analysis."* Which is an innovative ultrasound device capable of analyzing an individual's microbiota composition.[5]

[3] A. Radford, K. Narasimhan, T. Salimans & I. Sutskever, *Improving Language Understanding by Generative Pre-Training* (2018), https://scholar.google.com.
[4] *Ibid*
[5] *ChatGPT as an Inventor: Does It Make Sense?*, SEMJ (2024), https://doi.org/10.5812/semj-144254.

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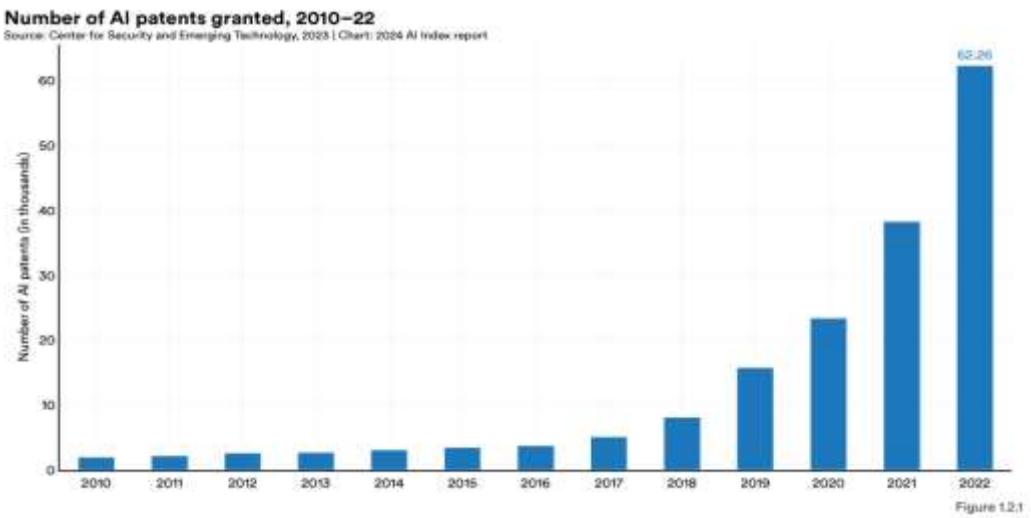
Despite the originality of idea, the question of granting patentability rights were marked with various limitations. As per the United States Patent and Trademark Office (USPTO) criteria to assess inventor eligibility [6], certain criterions to be considered for an original inventor that did not align with the capabilities of ChatGPT since it only provides a conceptual framework of ideas.

An invention may not consider ChatGPT has an original inventor but a broad claim where ChatGPT is used to generate steps like: obtaining data (in some way), pre-processing the data to transform it, applying an AI model to the transformed data to produce some AI output, post-processing the AI output [in some particular way], applying the transformed output to cause [some particular thing to happen. [7] Provided the particular provision in novel and non-obvious. It is likely that most ideas will be obvious if ChatGPT is included as an inventor with natural persons. A natural person who does not possess the same level of expertise as ChatGPT will be able to raise concerns about the patent applications created by ChatGPT.

Even with these nuances, the number of patents granted for artificial intelligence-based inventions is on the rise. For instance, between 2010 and 2014, the total growth in granted AI patents was 56.1%. However, from 2021 to 2022 alone, the number of AI patents increased by 62.7%.


 [8]

[6] *Patent Policy*, U.S. PAT. & TRADEMARK OFF., https://www.uspto.gov/ip-policy/patent-policy (last visited Aug. 14, 2024).
[7] *Can I Patent My Technology That Utilizes ChatGPT, LLM, or Other ML/AI Model?*, AMSEL IP LAW https://www.amseliplaw.com/can-i-patent-my-technology-that-utilizes-chatgpt-llm-other-ml-ai-model/.
[8] *The AI Index 2024 Annual Report*, STAN. UNIV. INST. FOR HUM.-CTR. AI (2024), https://aiindex.stanford.edu/wp-content/uploads/2024/05/HAI_AI-Index-Report-2024.pdf.

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Global consideration for Generative pre-trained transformer is evident in the major developed and developing countries. The sectors such as healthcare, Images, Automation/Software Development and Retail/E-commerce have seen maximum number of GPT based inventions.

GLOBAL PERSPECTIVE ON AI-DRIVEN PATENT APPLICATIONS

User-friendly interfaces paired with GPT chatbots have saved hours of thinking and developing components of new inventions. This neural network has been accessed by the majority of economies in recent years.

The patentability of AI inventions is treated differently in other jurisdictions.

India: Section 3(k) of The Indian Patent Act of 1970 mentions extensively the products that do not come under the definition of an invention under which states that "a mathematical or business method or a computer program per se or algorithms"[9] cannot be considered as an invention. The courts denied patentability not just based on the Act but also because it was concluded that the content generated is not inventive which is required as per the patentability test or the four tests of obviousness. However, there is a shift from this rigid requirement since AI inventions entail practical utility in various sectors which suffice the industrial applicability criteria. India witnessed 83,000 patents filed in FY2023, marking an annual growth rate of 24.6%, the highest in two decades.[10]

Top technology patents filed by Deep-Tech startups include Artificial Intelligence, Internet of Things, and Neurotechnology and they have file more than 900 patents since 2008. 32,000 Patent Applications under the PCT Treaty have been filed in India.

Healthcare-related patents, particularly in medical imaging, diagnosing, report generation, and testing, saw the maximum applications. Other top application areas include Automation/Software Development and Retail/E-commerce.

USA: The White House through a guidance has declared that while AI-assisted inventions are "not *categorically unpatentable",* the inventorship analysis should focus on human

[9] The India Patent Act, 1970 Section3(k)
[10] NASSCOM Report

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contributions, as patents function to incentivize and reward human ingenuity.[11] Patent protection may be sought for inventions for which a natural person provided a significant contribution to the invention, and the guidance provides procedures for determining the same. At least one or more human inventors need to have a significant contribution, The USPTO (United Nations Patent Trademark Office) stated.

Till date, The Silicon Valley that continues to hold the title for most patents awarded overall in the U.S., is forcing the government to design new rules around patent applications.[12] One industry experiencing a profound impact from GPT-powered innovations is healthcare. The ability of GPT to analyze and understand medical literature, patient records, and research papers has led to significant advancements in diagnostics, drug discovery, and personalized medicine. USA hold second larges number of AI based patents in the world. IBM, Alphabet/Google and Microsoft are the top US companies in terms of GenAI patents. IBM has developed a GenAI platform, Watsonx, which enables companies to deploy and customize LLMs with a focus on data security and compliance. Alphabet/Google's AI division DeepMind recently released its latest LLM model, Gemini, which is gradually being integrated into Alphabet/Google's products and services. Microsoft is another key player in GenAI and an investor in OpenAI. OpenAI itself has only recently filed its first GenAI patents.[13]

China: China-based inventors are filing the highest number of generative artificial intelligence (GenAI) patents. The Chinese Academy of Sciences is in the lead in terms of scientific publications with more than 1,100 publications since 2010. Inventors based in China were responsible for more than 38,000 patents between 2014 and 2023. Since 2017, China has published more patents in this field each year than all other countries combine. [14] It is worth noting that out of six of the top ten applicants for generative AI patents globally are Chinese enterprises or institutions. Tencent, Ping An Group, Baidu and the Chinese Academy of Sciences rank in the top four. GenAI helps users create text, images, music, computer code and other content through the use of tools including ChatGPT from OpenAI, Google Gemini and

[11] *Fact Sheet: Biden-Harris Administration Announces New AI Actions and Receives Additional Major Voluntary Commitment on AI*, THE WHITE HOUSE (Oct. 30, 2023), https://www.whitehouse.gov/briefing-room/statements-releases/2024/07/26/fact-sheet-biden-harris-administration-announces-new-ai-actions-and-receives-additional-major-voluntary-commitment-on-ai/.
[12] Scott Rosenberg, *How Silicon Valley Patents Are Evolving in the Era of AI*, AXIOS (Apr. 3, 2024), https://www.axios.com/local/san-francisco/2024/04/03/silicon-valley-patents-ai-chatgpt.
[13] Patent Landscape Report: Generative Artificial Intelligence, 2024
[14] *Ibid*

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Ernie from China's Baidu. The technology has been employed by many industries including the life sciences, manufacturing, transportation, security and telecommunications.

EU and UK: The U.K. Supreme Court unanimously held that the U.K. patent legislation does not permit an artificial intelligence system to be named as the inventor in a patent application in the case of Thaler v. Comptroller- General of Patents, Designs and Trademarks.[15] By doing so, the UK Supreme Court reaffirmed earlier findings from the UK courts and UK Intellectual Property Office ("UKIPO") that a patent's inventor must be a natural person. The UK Supreme Court's decision is the latest in a series of decisions where national courts and patent offices have considered whether AI systems can be named as the inventor of a patent application in their given jurisdiction. Consistent with the UK Supreme Court's decision, the United States Patent and Trademark Office ("USPTO") and US federal courts, as well as the European Patent Office ("EPO") and the German Federal Patent Court ("FPC"), have concluded that patent law does not allow for the listing of AI as an inventor on a patent application. The judgment does not preclude human inventors from using AI systems as tools to devise inventions, indeed the UK Supreme Court's judgment notes that "in this jurisdiction it is not, and never has been Dr Thaler's case that he was the inventor and used DABUS as a highly sophisticated tool. Had he done so, the outcome of these proceedings might well have been different." However, when seeking to obtain patents at the UKIPO it is essential that the inventor is a natural person.[16]

As far as EU is concerned, Inventions mentioned in the European Patent Convention can be granted in any field of technology provided that they meet TRIPS requirements. It also describes inventions that cannot be regarded as inventions such as “discoveries, scientific theories, and mathematical methods; aesthetic creations; schemes, rules and methods for performing mental acts, playing games or doing business, and programs for computers; presentations of information.[17]”

Japan: Japan is one of the most technologically advanced countries of the world. The country gives strong protection over patent rights. Under Japanese Patent Law, the term invention means “the highly advanced creation of technical ideas utilizing the laws of nature.”[18] Software

[15] *Thaler (Appellant) v. Comptroller-General of Patents, Designs and Trademarks (Respondent)*, [2023] UKSC 49.
[16] *Thaler v. Comptroller General of Patents*, [2023] UKSC 25, https://www.supremecourt.uk/cases/uksc-2021-0201.html.
[17]Convention on the Grant of European Patents (European Patent Convention), Oct. 5, 1973, art. 52(2).
[18] Patent Law, Law No. 121 of 1959, art. 2(1) (Japan).

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is patentable when all the steps within the invention are tied to hardware, this could include a processor, the computer, etc.[19] The ambit of the subject matter concerning the patent of a "computer program or anything equivalent" is also broader than other jurisdictions. In the Japanese Patent Office (JPO) Examination Guidelines, computer inventions are categorized into four types: method, computer-readable storage medium, computer program, and information equivalent to a computer program. The rights of an inventor, who must be a natural person, may be transferred to either natural persons or legal persons such as a company.[20] Recently, The Japan Patent Office (JPO) rejected a patent application naming an AI, "DABUS," (a generative based AI) as the inventor. The Court upheld the rejection, ruling that under Japan's Patent Act, only natural persons can be inventors, and the Act does not accommodate AI-generated inventions. The plaintiff's arguments referencing international agreements were dismissed. The decision may be subject to appeal, reflecting ongoing legal challenges in AI-related patent law.[21]

CONCLUSION

In conclusion, the advancements in artificial intelligence, particularly by using Generative Pre-trained Transformers (GPTs), are reshaping the landscape of innovation. Since these systems are known for their human like responses, their contributions in the inventive process are unable to fit through the provisions of traditional laws governing patents. This discrepancy creates a pressing need for a re-evaluation of patent laws to ensure they align with the current technological realities.

Jurisdictions of various nations worldwide have been analysing and trying to illustrate the complexities involved in integrating AI into the patent system. Some of the jurisdictions that this paper has explored specifically includes the United States, China, Japan, and the European Union. It can be observed that while some countries have begun to make adjustments, others are still exploring alternatives. These changes are often piecemeal and vary significantly from one region to another. This fragmentation not only complicates the process for stakeholders but

[19] What can be patented in Japan? – A simple introduction on requirements for patentability' (Transeuro, 28 September 2020) https://www.trans-euro.jp/en/English/blog/what-can-be-patented-in-japan-a-simple-introduction-on-requirements-for-patentability

[20] Masato Iida & Shinya Jitsuhiro, 'Japan: Patents Comparative Guide' (Mondaq, 8 March 2022) https://www.mondaq.com/intellectual-property/989178/patents-comparative-guide

[21] Hogan Lovells, *Can an AI Be a Patent Inventor in Japan?*, ENGAGE (last visited Aug. 14, 2024), https://www.engage.hoganlovells.com/knowledgeservices/news/can-an-ai-be-a-patent-inventor-japan#:~:text=An%20AI%20cannot%20be%20the,rights%20relating%20to%20the%20inventor.

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also undermines the global harmonization of intellectual property protections.

To address these challenges, it is essential for patent laws to evolve in a manner that accommodates the unique attributes of GPT-driven inventions. This includes considering how generative ideas can be recognized as a contributor to innovation while maintaining a robust framework for protecting novel ideas. The aim should be to strike a balance that both recognizes and rewards the inventive contributions of AI, without compromising the integrity and fairness of the patent system.

Looking forward, the integration of AI, including Generative Pre-trained Transformers, into various fields of innovation will continue to generate novel and groundbreaking inventions. As the technologies advance, it will be crucial to establish legal mechanisms that can effectively protect their uniqueness and foster continued progress. Developing a harmonized global approach to patentability, which accommodates AI's role while preserving the core principles of intellectual property, will be key to ensuring that the legal system remains relevant and effective in the face of rapid technological evolution. This strategic adaptation will help safeguard innovation and drive future advancements, ultimately benefiting society as a whole. Additionally, measures must be taken to prevent the exploitation of GPT based inventions and also to uphold the integrity of the patent system, such as ensuring that the criteria for patentability are applied consistently and fairly across all jurisdictions.

Ultimately, the goal should be to establish a balanced and forward-looking patent system that inculcates innovations while providing clear and equitable guidelines for the protection inventions that includes GPT as an inventive component. By doing so, we can ensure that the legal landscape evolves in tandem with technological advancements, supporting continued progress and safeguarding the future of innovation on a global scale.