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A Critical Analysis of UK Legal Frameworks of Intellectual Property Laws and Artificial Intelligence (AI)

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ABSTRACT: The artificial intelligence (AI) sector is expanding quickly internationally. According to the United States International Trade Administration Market Intelligence (2022), the UK's AI industry is expected to be worth approximately €17 billion, placing it third globally after China and the United States. This will necessitate the creation of a body of law for the regulation and shielding of AI-generated work. The intellectual property sector is struggling and is calling for a strong enough legal framework to accommodate the work that AI does. For example, the World Intellectual Property Organization (WIPO) has opened general comments about the relationship between AI and IP, recognizing the technology allows interested parties to participate in the conversation and allow for normal socioeconomic potential (WIPO Conversation on intellectual property IP and Artificial Intelligence (2020). Leveraging AI's advantages while guarding against and getting rid of its risks is the problem the UK faces. The United Kingdom boasts the highest concentration of artificial intelligence start-ups in the European healthcare and medical technology sectors. However, the UK's AI development and deployment capabilities pale in opposed to those of the United States and China, which are the world's leading nations in this domain. This article critically examines that how the AI creates impacts on IP laws in UK and proposes recommendations for better solutions.

KEYWORDS: Artificial Intelligence (AI), Intellectual Property Laws, Legal Liabilities and Infringements, UK Legal Framework, World Intellectual Property Organization (WIPO)

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Introduction to UK Legal Framework of IP Laws

The Copyright, Designs and Patents Act 1988 (CDPA) is the primary piece of legislation that governs intellectual property law in the United Kingdom, including copyright and patent law (Picht et al., 2022). According to Section 1 of the Copyright, Designs, and Patents Act 1988, there are no copyright or patent protections that protect artificial intelligence. Copyright is granted to "original films, sound recordings, and literary, dramatic, musical, or creative works, as well as the typographical layout of published editions". According to a 2015 message from the Intellectual Property Office, only content that is unique enough to qualify as the author's "intellectual creation" is protected by copyright. In determining whether copyright exists, the agency stressed that the work's originality must be ascertained. In reply to the consultation, the Intellectual Property Office broadened this concept. For 2022, focusing that a savvy creation happens when the creator has made

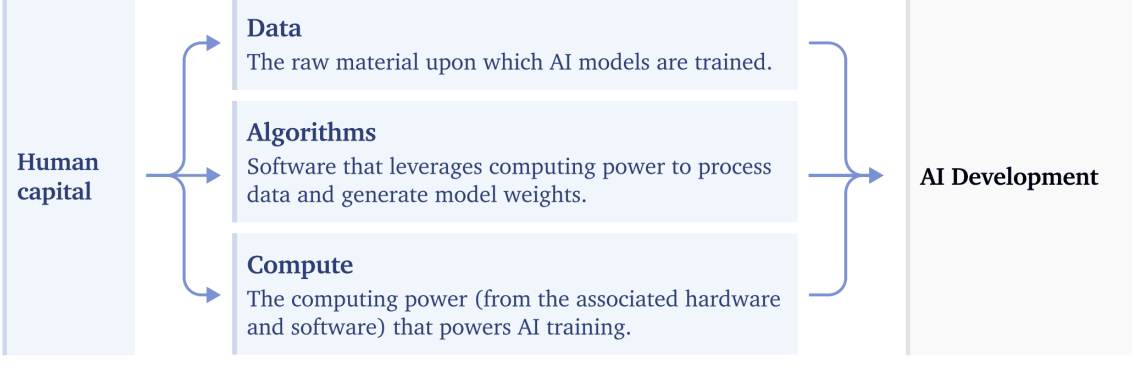
independent and inventive decisions, and the artwork exhibits their individual style and a degree of unique human originality. AIs are not now eligible for copyright protections in the UK due to the definition's reliance on human input; the government has clarified that this is because "AI use is still in its early stages." As a result, it seems difficult to thoroughly evaluate the possibilities, and making any modifications might have unintended consequences."

The copyright law in the UK safeguards "computer-generated works", meaning works produced by a computer without any human involvement, but it gives the machine no legal rights of its own. Section 9(3) of the Copyrights, Designs, and Patents Act 1988 defines the "author" of a computer-generated work as "the individual who makes the essential preparations for its creation." In most cases, this results in the copyright being granted to either the computer's inventor, the computer system's inventor, or both. In the 2022 consultation response, the Intellectual Property Office suggested the potential option of amending legislation to recognize AI as an individual inventor (Feikhert & Clare, 2022).

Artificial intelligence requires algorithms and data to function. Training is the process of first gathering large amounts of data and incorporating it into mathematical models, or algorithms. The data is used by the algorithms to identify trends and forecast outcomes. Machine learning is the term used to describe such processing methods. Neural networking is an AI learning process that is frequently supervised by humans, although in other situations, human oversight is not necessary. This is the most sophisticated type of AI, able to execute algorithms efficiently and with a lower chance of error on its own. To put it simply, artificial intelligence is the process of teaching machines to think and behave like people so they can solve problems and complete jobs automatically. A type of artificial intelligence known as "natural language learning" imitates human speech patterns and comprehension in both spoken and written language.

Figure 1

The Three Technical Inputs to AI – Data, Algorithms, and Compute



UK Patent Law

The 2017 Industrial Strategy, which outlined the government's vision and foresight to establish the UK as a global hub for AI innovation, has been essential in many of the UK's achievements in AI. To strengthen the UK's position as a global leader in artificial intelligence, the government and the country's AI ecosystem reached an agreement in April 2018 on a roughly £1 billion AI sector deal. In addition to building on the UK's

strengths, this new National AI Strategy marks the start of a step-extrude for AI inside the country, understanding how AI can boost resilience, productivity, boom, and novelty throughout the public as well as private zones (Intellectual Property Office, 2022).

Current developments suggest that artificial intelligence (AI) is significantly boosting innovation. In fact, patent programs that designate an AI device as an inventor have previously been secured by the UK Intellectual Property Office. According to UK patent law, individuals who use AI to plan inventions may, in most circumstances, be credited as inventors. This enables safety and encourages these kinds of advances. But when AI becomes more useful, the current UK inventorship law ought to be advanced to a higher level of guidance innovation. The government determines to ensure that the IP device is used to promote innovation. It additionally desires funding in research and development (R&D) to be accurately appreciated, no matter the well-trained gear involved in the invention process, or how the invention came to be. If AI-contributed innovations are not able to be patented, there can be little funding in the present era. If the opposite occurs, exchange secrets may be used as a result, harming future innovation.

The Understanding of Inventors and Inventorship

Only people may apply for patents in the United Kingdom. The inventor of inventors must be a person in order to possess the inventorship. When patent applicants mentioned AI in two separate patent applications, the court of appeals verified this precisely. Finding the inventor is crucial since only they have the legal authority to possess a patent and enjoy its benefits. It will be essential that the patent applicant explains how they can qualify for the patentability. Even if AI is identified as an inventor. In the current legal proceeding, the appellate Court stated that the claimer till now has not procured a position to reveal any regulation that could supply him the possession of the United Kingdom Patent Act 1977, said that in the UK, an innovation can only be credited to the person who created it (Patent Act 1977). Before awarding inventorship, courts will determine the actual devisor by facts. Currently, a small number of different countries have gone so far as to award patents wherein an artificial intelligence system is referred to as an inventor. But the majority, as well as the UK limited individuals for patentability. In time of 2018, the inventor of a patent had to be a human, according to the five areas that accounted for 80% of all patent packages worldwide. In July 2022, UK government official website started as a consultation and suggested a number. As a policy for the legal framework to recognize the Artificial Intelligence creation the suggested policy was as follows. Under the option of "do not alter the law", the modern-day gadget wherein patents are best to be had in which the inventor is human might be maintained. Patents might stay to be had in which AI gear is utilized by a human inventor. Patents might now no longer be to be had in which AI is called because the deviser of the discovery although collectively with a human co-introducer. Some stakeholders believe that the inventorship regulations in the UK are sufficient as they are. According to them, at least in the short run, a human will continue to be considered an inventor for the majority of inventions developed with AI involvement.

Permit patent filings when AI is listed as the creator

With this option, the patent system might be modified to protect inventions created with the assistance of artificial intelligence in the UK. Without having to speak with a human creator, it may always be clear that a non-human inventor is the source of an innovation.

It is recommending unique approaches to reaching this:

a) Change rules to permit AI to be called as inventor
b) Alter rules to do away with the demand to call a formulator if the discovery is devised with the aid of AI.

Under each approach, patent regulation might offer a proper to reap and very possess the intellectual property rights to an invention created with AI's assistance. The mankind is carefully answerable for an invention devised with the aid of using AI might very own the patent rights inside the first instance.

Protect AI-developed Inventions with a New Sort of Protection

In this regard, an updated safety form could be made, much like a patent however with extra confined specific entitlement. This could defend innovations that are presently unfit for patent safety as they're AI-devised, and a human inventor cannot be identified. This could function along the present-day patent system. The courting among two structures could want to be made clean in particular in which innovations have each human and AI co-inventors.

Some parties believe that a new proper should strike the right balance between protective AI-devised innovations and worthwhile people who spend money on them. Some endorse a gain of a brand new property that might now no longer unreasonably limit wider opposition and innovation with the aid of using 3rd parties.

Case Study: DABUS Case Law 2019

Background

Issues and Summary of Decision

Certain questions were raised before the court during the proceedings of this case such as; is it possible for a non-individual inventor to be recognized by virtue of existing law? Second, is Mr. Thaler qualified to file for a patent in preference to DABUS just by virtue of being DABUS's owner? The right to a patent grant resides principally with the inventor or genuine deviser of the idea, and it has not been transferred to the applicant in any manner. Ultimately, if the applicant provides very explicit statements regarding his involvement in these inventions and the answer to either of these two questions is negative, before determining whether to withdraw or proceed with the applications right away, the comptroller must wait until the conclusion of the 16 months as stipulated by rule 10(3).

The issue under consideration in this decision was whether the Act permits non-human inventors, such as AI machines, to be recognized as such and, if so, how the applicant became entitled to a patent that was once held by the inventor? The hearing officer concluded that the term "person" in the Act and Rules was meant to relate to a human being identifying an AI system as a result of the inventor's failure to comply with section 13(2)(a). The hearing officer came to the conclusion that the applicant could not obtain a property right from the AI machine by merely owning it, thereby failing to meet the requirements of section 13(2)(b). This is because computers lack legal personality and are not allowed to own property. At the conclusion of the allotted time, the petitions would be considered withdrawn for failure to comply with section 13's formal requirements (Stephen L thaler v. the Comptrolleer, 2021).

Copyrights Ownership Law

Copyright is defined under section 01 of the United Kingdom Copyright Design and Patents Act 1988 as "Copyright is a property right that exists by this part in the following descriptions of work: (a) Original literary,

dramatic, musical, or artistic works; (b) Sound recordings, films or broadcasts; and (c) the typographical arrangement of a published edition" (Government of UK, 1988).

Copyright ownership protects others from copying and using the work of the author without permission meanwhile providing exclusive rights to the author of the copyright to gain economic benefit from his original creation. There is no procedural fee and registration of copyright, but it applies to the work that exists, to claim the copyright there must be original work that exists as it does not apply to mere ideas (Zeller & Bruno, 2009). Either individual or company can automatically gain copyright after the creation of work under the categories prescribed by the Copyright Design and Patents Act 1988 of the UK. It is prominent to discuss that a person living in the UK had created work and gained ownership of the copyright, his ownership would not only subjected to United Kingdom jurisdiction as the UK government is a member of the Berne Convention (McCutcheon & et al, 2020). In most of countries, the tenure for the copyright authorship lasts for 50 years for the written, dramatic, and artistic work, and for the photographs category it is limited to 25 years. Under the law, copyright authorship is subject to the human mind creation the original work being created by the human mind. Artificial intelligence emerging in this field also would be alarming to and could impact negatively existing copyright ownership and future copyright owners. UK Intellectual Property Office is aware of this alarming situation and consulted on the potential changes of AI innovation in Intellectual Property Laws. It may argue that UK government has protected the human mind creation with the assistance of AI if work is the creation of a human mind process and it can get the benefit of copyright like other tools. For instance, where the camera has a feature of AI assistance and the photographer captures the photo, the photographer will automatically get copyright protection regardless of the AI assistance element exists there (Intellectual Property Office, 2022).

Computer Generated Work (CGW)

The UK is one of the few nations that permits copyright protection for computer-generated work (CGW). Computer-generated work is referred to as work that results without human intervention. The person responsible for making the appropriate arrangements for the task can be considered the author of computer-generated content (Lui & et al, 2021). Copyright protection is valid for 50 years from when the work was fully created. For the work category of artistic, the life span is limited to 70 years of period (Griffin et al., 2013). In the case where a song is generated by the AI then the copyright is vested to the producer of the song recording. Another category is Database, UK IPO protects investment in Database, and for copyright, it is not necessary to be original, however, there is substantial investment is needed to attain database rights. The right protection period for the database category is subject to 15 years (Intellectual Property Office, 2022).

To receive copyright protection for computer-generated work, law demands the originality of work. However, the legal aspects of originality can be defined as human writers or attributes like as skills, dispositions, and discernment. There is a claim that the law is ambiguous and inconsistent. Furthermore, it is argued that copyright protection is excessive to CGW since the computer does not need any protection or reward for new creation, but IP rights cost to a third party. There is a need that restrictions be placed on the protection of computer-generated content. It is believed that shielding to CGW could be a reason for high investment in AI technology.

Text and Data Mining (TDM)

The process of using automated computer tools to evaluate vast amounts of data in the form of patterns, trends, and other valuable information is known as text and data mining (TDM) (Kim et al., 2018). It is frequently used in the sector of medicine, scientific data analysis, making notes, to learning the relationships and trends the working mechanism of TDM is coping the existing material to be analyzed but some works are protected by copyright, therefore sometimes it is required to get a license to rely on copyright (Intellectual Property Office, 2022). In 2014 CDPA provided a specific exception to TDM under copyright, this exception has the following features.

- It permits copying for noncommercial purposes.
- For researchers having a lawful purpose.
- Acknowledge of work and right holder.

Positive Behavior of AI in Copyright

AI and IP in the UK

With the development of AI technologies and the expansion of their applications, copyright laws in the UK are likely to see substantial changes in the future behaviour of AI. Taking into account how AI may affect UK copyright law, keep the following points in mind.

a. Title to Works Created by AI

Current Law: Copyright is normally attributed to the "author," who is defined as the person who created the work, under the Copyright, Designs and Patents Act 1988 (CDPA). Currently, AI is not recognized by law as an author of the work outcome of AI, the person who set up the AI's functioning may be regarded as the copyright owner in certain cases (Binns, 2022).

b. Prospective Modifications

With AI systems becoming increasingly proficient in producing artistic content on their own, there might be proposals to modify copyright regulations to handle the ownership of works produced without direct human authorship. Discussions on whether AI should be given copyright in any way or whether new rights classifications should be created for content created by AI could result from this (Milliken, 2023).

c. Trends in Litigation

The legal ramifications of using copyrighted works to train AI models are brought to light by recent lawsuits, including those involving Getty Images and Stability AI. These trials could establish significant guidelines for how copyright law will change to accommodate AI innovations and what that means for content producers (Muun & Goodwin, 2024).

d. Future Legislative Reforms

The way copyright and AI are developing may lead to future legislative reforms to handle the special difficulties presented by AI-generated content and the usage of copyrighted materials in AI training. Participants from the tech and creative sectors will probably be essential in forming these conversations.

Challenges of AI in Copyright

The UKIPO faces various obstacles concerning the assimilation of artificial intelligence (AI) into its regulatory structure. A coordinated strategy by policymakers, legal experts, and industry stakeholders is necessary to address the complex difficulties that the UKIPO is confronting in respect to artificial intelligence. By tackling these issues, the UK can ensure the ethical application of AI technologies and promote an environment that protects creators' rights and innovates. These are the main issues that were found based on the search results.

a. AI Bias

Bias challenge depending on the data they are educated on; AI systems may either add or reinforce societal biases. The treatment of some applicants or works within the IP system may be impacted by bias outcomes, which raises questions about the fairness and equity of IP decisions (Marcowitz-Bitton & Morris, 2020).

b. Issues with Liability

Liability Challenge: It can be difficult to establish liability when AI programs cause injury or violate intellectual property rights. The enforcement of IP rules is complicated by the need for policymakers to determine who is liable for any undesirable outcomes resulting from the usage or development of AI technologies.

Employment Challenge: The rise of AI technologies is expected to disrupt existing jobs and create new ones. The UKIPO must anticipate and manage this transition to minimize negative impacts on the workforce and ensure that the IP system supports innovation while addressing employment concerns (Denoncourt & Janice, 2021).

c. Access to and Use of Data

Access to Data Challenge: Large datasets, frequently owned by a few firms, are necessary for training powerful AI systems. Due to the resulting competitiveness and business concerns, it is difficult for smaller AI companies to obtain the data required for development.

The UKIPO is looking into how text and data mining (TDM) might be used in artificial intelligence (AI).The absence of legislative lucidity concerning TDM for commercial objectives presents obstacles for artificial intelligence firms striving to lawfully and efficiently leverage accessible data (Smith, 2023).

d. Regulatory Explicitness

Regulations Must Be Updated: The special difficulties presented by artificial intelligence may not be sufficiently addressed by the existing legal framework. The UKIPO acknowledges that new laws are required to clarify matters like copyright, liability, and content creators' rights.

UK Trademark (TM) Legal Framework

Likewise, patent and copyrighted work trademark challenges for AI of very different aspects, it is regardless of whether AI generated the logo or trademark designed for a company or business and how AI is involved in the mechanism of application, registration, and other administrative procedural aspects. In relevant fields AI is used to scan the database, comparative similarities assessments, detect prior-based trademarks, and trademark clearance. It is significant to address that AI is purposely used to detect trademark infringement

on online platforms. Another aspect is undermining AI technologies in connection with the general regulations of existing trademark law. One of TM's crucial functions is identifying the source of goods. Make differentiate between goods sources and identification of their favorite brands considering the velocity with which clients keep today, this fictitious "common purchaser" has little to no time or possibility to evaluate goods/offerings facet via way of means of facet and it's far assumed that the purchaser acts at the reminiscence of a photograph or perception. Upon this assumption of imperfect recollection in humans, an evaluation of similarity or chance of misunderstanding and infringement is conducted (Kose & et al, 2024). To deal with the business of trademarks, the UK Trademarks Act 1994 (TMA) is enforced along with the Trademarks Rules 2008. Section 10(1) and (2) of the TMA set out in situations where someone violates a trademark, such as when using a sign that could lead to confusion (Kose & et al, 2024). From the government of the UK official website, a consultation started to grapple with AI infringement in Trademarks and suggested policies to be carried out. Trademark infringement concerns are based on human interaction, and how the AI can be held for infringement. Furthermore, law is uncertain about the infringement caused by AI, to whom will held liable, operator, developer of software, trainer, or data provider. Moreover, the massive use of AI-driven purchasing decisions summons trademark infringement: the likelihood of confusion that may presume human abstract impressions.

Case Law: Cosmetics Warriors and Lush v. Amazon

This case highlights the requirement to bring change in the structure of the trademark to prevent present and future problems, In the Lush v. Amazon case, Lush turned down Amazon's request to sell its products on the marketplace because the latter had bid on the name LUSH. In results LUSH search on Google also shows Amazon Products. In the verdict, the court ruled that Amazon infringed the community trademark LUSH (Cosmetics Woriorrs LUSH coLtd v. Amazon, 2014). Although case laws do not carry the perquisites of AI involvement directly it is evident how AI would change the complete process of data analysis, this is crucial for a trademark owner to monitor strategies for the use of technology in their business because this would impact the directly in economic ways moreover they are also required to adopt strategies that could prevent them from future infringement (Kose & et al, 2024).

AI Tools and UKIPO

The UKIPO uses AI techniques. The renowned pre-apply advisory service finds similar and current trademarks and focuses on the right product and service categories for the requested trademark. About 250 times a day, according to Pierre Olivier, the tool is used, which leads to quicker tests and better application quality (Scott-Boyer et al., 2023). The UKIPO's patent examiners use the European Patent Office's patent translation tool. The appropriate examiner receives patent applications based on a machine learning patent allocation process. This saves time during the allocation process and improves AI accuracy from 60% to 80% through machine learning. However, the effort on AI-assisted patent prior art searches has been halted (Center for Intellectual Property and Competition Law (CIPCO), 2021). The Office evaluated Derwent Innovation's patent search tool, which employs plain text as input and searches both patent documents and non-patent literature (Intellectual property is improving the lives of everyone, everywhere, 2024). The UKIPO sees possibilities in using AI to improve several office procedures. Consisting of enhanced authentication and validation to raise the caliber of applications, pre-apply services and advice for all IPRs, and automated text searches. The UKIPO

and EPO collaborate on developing AI search tools (Cuntz et al., 2024). According to the UKIPO, applied AI, inventions involving the utilization of AI to seek out technical issues, bring about technical tasks in domains unrelated to AI, or enhance computer performance are considered applied AI inventions. The final application of AI is linked to the patentability of applicable AI-related origination. In these situations, the AI invention will probably demonstrate a technological advancement and could qualify for patent protection. UKIPO is synchronizing for applied AI invention as patentable when artificial intelligence (AI) is used to solve technical issues or carry out technical tasks in domains unrelated to AI. A system that automatically recognizes a vehicle's registration number, checks for problems with a gas supply system, examines and categorizes motion using data from motion sensors, and recognizes cavitation within a pumping mechanism (Griffth, 2024).

Challenges of Patents and AI in UKIPO

a) Criteria for Patentability

Technical Contribution Requirement: An AI invention must show a technical contribution to be eligible for patent protection. According to the UKIPO standards, an AI invention is likely to be considered technical if it establishes a new method of computer operation, solves a technical problem, or embodies a technical process outside of the computer. This stipulation may make evaluating AI innovations more difficult, particularly when attempting to discern between features that are technological and those that are not.

Exclusions for Mathematical Methods and Computer Programs: Patent law in the United Kingdom bans inventions that are simply related to mathematical methods or computer programs "as such." This makes AI inventions, which often incorporate algorithms and software, more challenging. As a result, these exclusions may result in rejections (Denoncourt & Janice, 2021).

b) Ambiguity in Ownership and Inventorship

Ownership Issues: It's still unclear who is entitled to the intellectual property created by AI systems. When an AI develops anything on its own, it can be difficult to decide who should own the patent the AI, the user, or the developer. There is also a lack of definitive legal guidance in this area.

Inventorship Recognition: In light of the DABUS decision, the UKIPO currently maintains that non-human entities are ineligible to be acknowledged as inventors under the terms of the Patent Act of 1977. This begs the question of how AI fits into the creative process and if patent eligibility requires human participation.

c) Clear Guidelines Are Necessary

Lack of Clarity: The patentability of certain AI ideas is still unclear, even in light of the revised standards. The UKIPO has admitted that different people's interpretations of specific criteria—like the technical contribution—can provide different results when it comes to patent exams.

Patentability Scenarios: The UKIPO has produced examples of both patentable and non-patentable AI ideas; however, the guidelines make clear that they are merely hypothetical and do not set a precedent for law. This could cause applicants trying to understand the patent process to become uncertain.

AI Economic Significance and Factors

Top-ranked in the World Intellectual Property Office's 2019 Global Innovation Index, the United Kingdom is a global leader in innovation. One of the main objectives of the Industrial Strategy is to make the UK "the most inventive country in the world". Which includes a £7 billion increase in public R&D funding. Innovation drives economic growth. Innovation boosts productivity, expands markets, and generates jobs. According to research, innovative UK businesses grow twice as quickly as those that don't. Intellectual property (IP) is critical to driving innovation. To be innovative, one must take chances, spend money on R&D, write a book or song, or use savings to launch a new company. IP reduces risk by, allowing creators to safeguard their innovations via a system of rights including trademarks, patents, copyrights, and designs. Inventors, researchers, and artists are protected by intellectual property rights, permitting them to invest resources including time, money, and expertise in the creation of new and enhanced products to make a profit (Innovation and Growth, 2018-2019). In the context of CGW, Copyright protection is said to be excessive for CGW since intellectual property rights are expensive for third parties, even though computers don't require any protection or compensation for new creations. It is being urged that there be restrictions on the protection of computer-generated content. The rationale behind the substantial investment in AI technology is thought to be protection against CGW.

The Hargreaves Review of Intellectual Property, an independent government assessment published in 2011, concluded that the UK's stringent data regulations "block[s] valuable new technologies" and impede economic expansion. Even though the UK's R&D and technology have been hampered by this regulatory framework for years, the AI revolution has made its effects even more significant. Unfortunately, the UK's stringent copyright laws do not shield UK content producers from global AI businesses using their work. Its main real-world impact is to stop UK-based businesses from exploiting that data and creating new technology here, since there are other jurisdictions with more lenient laws. Policies such as an opt-out model would be a lose-lose situation since they would harm the UK tech and R&D sectors while leaving the creative sector unprotected. The UK should follow Japan's lead and enact copyright exceptions for text and data mining, which would enable developers to analyze and train on publicly accessible data that has already been legally obtained. This should not be interpreted incorrectly. Growth is the government's top objective and fulfilling that promise requires decisive policy decisions. The most successful leaders are aware that making tough choices even ones that are first met with opposition is essential to ensuring long-term success. Although copyright and AI have been politically delicate topics, there is no denying the strategic and economic benefits of a flexible regime.

The UK needs to take bold action if it hopes to become the global leader in AI and draw in foreign investment. A significant signal that the UK is open to innovation would be sent by adding a text and data mining exception to copyright law, which would encourage immediate AI investment and long-term economic progress (Willemyns, 2025). It currently supports 64,500 employments, makes £14 billion in revenue, and creates £5.8 billion in GVA, all of which are continually rising. AI is growing at nearly twice the rate of the overall economy as part of the £1 trillion technology sector. According to projections, it could increase economic growth in the UK by up to 16%, thus increasing GDP by £550 billion by 2035. The stakes are especially high in terms of AI and copyright regulation. A copyright policy that is too restrictive and solely focuses on licensing could cost the UK economy at least £29.9 billion in the next five years, £75.9 billion over ten, and an astounding

£182 billion over twenty, according to analysis by UK Day One (2025). These numbers highlight how crucial it is to properly implement the copyright framework (Walker & Versekaite, 2025).

Recommendations

In the current research, investigations are carried out to find the answers to problematic questions, based on accuracy and authenticity. It is pleasingly claimed that answers are found to the extent of the present situation of AI in IP Laws. This collection of recommendations seeks to address these challenges, offering a comprehensive and nuanced approach to dealing gaps and prospective challenges to IPO in context of AI. The authors claim that AI innovation is in the early stages of IPO so existing laws are not sufficient to handle the whole scenario, IPO of state making consultations and research to provide reasonable and certain pathways for this innovation, however, AI growth is in leaps and bounce that is an alarming situation for the state's IPO, so it is required to speed up its legislation or the interpretation of existing laws in a way that can provide a friendly pathway for AI smooth working as well to preserve the sole aim of intellectual property office. The same thing is needed simultaneously on a global scale, and it will eventually become necessary to harmonize the legal system. It has been learned that almost all members of the United Nations are signatories to the Berne Convention for copyright protection, TRIPS Agreement including most prominently part of the World Intellectual Property Organization, that means legal bodies are regulating nations for the same cause at the international level, harmonization of the legal framework will promote the AI in IPO as well imprints its positive effects in economic factors. The authors feel the gaps and provide the following recommendations.

a. Legal Perspective

Certainty for AI Inventorship: Clear guidance on the standards for recognizing inventorship when AI systems aid in the creation of innovations should be established by the UKIPO as it continues to negotiate the complexity of AI inventions. Determining the place of human inventors in comparison to AI systems is part of this. IPO should create precise guidelines that cover ownership, inventorship, and the standards for judging technical contributions when it comes to patenting AI technologies.

IP laws are regularly reviewed: To meet the opportunities and difficulties posed by artificial intelligence, IPO should commit to routinely examining and revising IP rules, making sure that the legal system develops in step with technical progress.

Programmers as Author: IPO is organized to perverse natural person creativity, in legal frameworks, it is suggested that to preserve the IPO's sole aim legislation should show their interest in recognizing AI programmers as to entitle for copyright work. The author's scope should encompass not only the human being who created the work but also the human being who made the majority of the contributions. If this is the case, and the programmer is given moral and financial rights, then other problems occur. Although there is some incentive in place, potential buyers won't be motivated to buy the product if it is refined sufficiently to go into mass production because the programmer will own the copyright to the machine's final output.
Promote AI-Powered Trademark Monitoring Services: To assist companies in proactively safeguarding their brands, the UKIPO ought to support the creation of AI-powered trademark monitoring services. These services search many marketplaces and jurisdictions for marks that are identical or similar, allowing them to identify possible infringements early on.

b. Economic Perspective

AI is the fourth industrial revolution and boosting economics factor in every discipline of life, likewise, Intellectual Property Rights exclusively protect authors, inventors, and trademark holders in procuring economic benefit. No doubt AI also boosts economic factors for IPO and will play a phenomenal role in the GDP of any state. But in order to control economic elements in favor of writers, inventors, and trademark holders, national laws must be clear; additionally, in order to improve a country's reputation globally, international standards must be met. Here are some considerations that will aid in tackling the problems in front of the Intellectual Property office.

Help SMEs Gain Access to Intellectual Property: The IPO should create initiatives that offer trustworthy and reasonably priced IP counsel that is especially suited to small and medium-sized businesses (SMEs). By supporting SMEs in overcoming the challenges associated with protecting their intellectual property, this support will promote innovation in the AI industry and increase economic diversity.

Establish a Digital Copyright Licensing System: By ensuring that rights holders are easily recognized and accessible, a digital copyright licensing system can lower obstacles for AI developers and foster the expansion of digital technology firms.

Frequent Review and Modification of IP Policies: In order to keep up with the quick developments in AI, the IPO should pledge to periodically review and update its IP policies. In doing so, the interests of consumers and rights holders will be balanced, and the legal system will be kept current and innovative.

c. Ethical Perspective

After AI factor involvement in Intellectual Property, ethical implication is also a main concern of stakeholders and IPR holders.

Fairness and Bias: Concerns over fairness in IP-related judgments are raised by the possibility that AI systems will reinforce or even magnify biases found in their training data. Accountability and transparency come in second. AI algorithms' frequently opaque nature makes it difficult to maintain accountability and openness in IP procedures like copyright enforcement and patent licensing. Here are some key recommendations for addressing the ethical implications of AI in Intellectual Property Offices (IPOs):

Create Ethical AI Guidelines and Principles: It is the responsibility of IPOs to set and implement clear guidelines and criteria for the ethical advancement and use of AI in IP operations. These oughts to address matters such as privacy protection, accountability, transparency, and algorithmic bias.

Implement Algorithmic Auditing: To detect and reduce potential biases or unjust outcomes, IPOs should regularly perform algorithmic audits of their AI systems. AI systems should be audited at every stage of their development, from training data to outputs.

Maintain Human Oversight: IPOs must retain human oversight and decision-making authority while utilizing AI's efficiencies, particularly when it comes to highly consequential intellectual property decisions. When necessary, humans ought to have the authority to override AI outputs.

Give Staff Comprehensive Training on AI Ethics: IPOs should give all staff members who are involved in creating, implementing, or utilizing AI systems thorough training on AI ethics. This increases knowledge of

ethical risks and the ability to recognize and manage them. It is believed that prioritizing these ethical issues will help initial public offerings (IPOs) maximize AI's benefits while reducing risks and fostering public trust in the IP system. AI must be actively and ethically governed in order to fulfill its promise and preserve fundamental moral principles.

Future Trends and Policy

The topic of potential future directions for AI in the IP space is covered in The Changing Role of AI in Intellectual Property. AI's application in IP is anticipated to increase as it becomes more prevalent in data analysis for IP strategies, enforcement methods, and creative processes. Legislators ought to collaborate on proactive change, including the financial, ethical, and technological ramifications of artificial intelligence in IP law. Practitioners must remain up to date on the latest developments in AI, incorporating this information into their IP strategies and procedures. The dynamic area where AI and IP law converge is concerning continual legal reforms, policy changes, and careful assessment of ethical ramifications. This section aims to offer a road map for resolving these intricate issues, offering perspectives and suggestions for a future where the field of intellectual property will see a growing influence from artificial intelligence.

Conclusion

To sum up the AI innovation in UK IPO it is concluded that the UK is among the few nations that is allowing and accepting AI and trying its best to deal with all possible ways in the near and far future. In context of the legal framework, UKIPO started consultation from time to time to manage the problems with their best solution, although the legal framework is deemed sufficient for the present AI innovation since it is in its early stages and it is also observed that law is not certain in trademark where it is kept silent about infringement liabilities will vested developer, trainer or the operator. It is hoped that by IP innovative UK strategy 2024-2027, UKIPO will be cleared of all uncertainties at the end of 2027.

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