

Artificial Intelligence for Mitigating Patent Process Hurdles

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Abstract— New thrust by the government to develop skill sets and entrepreneurship has resulted in massive inventions and rapid advancement of science and technology. complexity in monitoring, managing adapting, and registering innovations is becoming increasingly difficult due to a massive number of inventions. Maintaining standards for new innovations along with increased time for their scrutiny is causing delays in the adaptation of new inventions. The Intellectual property rights scrutiny towards judging the uniqueness of a particular innovation and prior art search has been made considerably easy by using artificial intelligence and machine learning. This latest technology can help to overcome the cumbersome processes for the allotment of intellectual property rights. This technology eases the burden of managing a large number of innovations filed as patent applications. Data mitigation becomes easy in the area of prior art searches. The world trade organization has announced certain stipulations in the form of law to avoid overlapping of the inventions and grant patents in line with the geographical restrictions. This article makes a concrete proposal to understand the complex interrelationship between trade law, jurisprudence, and the application of artificial intelligence in overcoming the hurdles concerning the patent grant process. The paper also proposes the use of artificial intelligence for patent-related dispute settlement in line with Trade-related aspects of intellectual property rights agreements. The paper advocates the use of artificial intelligence in the area of application and grant of patents.

Index Terms— Artificial intelligence, Innovation, Intellectual property rights, Machine Learning, patent.

I. INTRODUCTION

Innovation is an integral part of human evolution. Yesteryear needs to trigger new solutions. The advancement of technology leads to reduced effort and effective utilization of time. Yesteryear problems like user interface are enhanced remarkably with the use of artificial intelligence and machine learning. The main aim of artificial intelligence is to allow machines to perform tasks that are laborious and difficult for humans to analyze. This includes process optimization, inventory management, monitoring for maintenance, detection of fraud, and many other fields that deal with large and changing data. The tools and algorithms that assist in these tasks could also assist in assessing and qualifying the new innovations and developments that are constantly taking place around us and usually take a daunting amount of time to come to light. There is a great human effort that is required in organizations such as the world trade organization to process applications relating to intellectual property rights such as patents, Copyrights, and trademarks which often take detailed scrutiny, check for infringement and assure novelty of the idea. This often leads to backlogs and prevents innovations that are a potential solution to sudden catastrophic circumstances such as the COVID -19 pandemic. The latest technology of artificial intelligence and machine learning could help to reduce the required time as well as the cost involved in accruing intellectual property

rights for booming innovations

in science and technology leading to the well-being of mankind as well as the natural environment worldwide

Artificial Intelligence and machine learning also have many unexplored aspects that are steadily being rediscovered; however, the basic principles and algorithms that have been discovered have caused remarkable ease in performing tasks that would otherwise be impossible or inaccurate. Using some of the fundamentals such as prediction algorithms, pattern matching algorithms, and behavior analysis algorithms, the scrutiny of documented innovations can be accelerated, and checking for the originality of ideas becomes easier.

Information and knowledge are considered wealth-creating assets; the present need is to promote an ecosystem for promoting a knowledge-based economy. To achieve this the countries have subscribed to the World trade organization as members. The member countries have to provide patent protection for inventions. To qualify for a patent the invention should satisfy the criteria of "Novelty", it consists of an "inventive step", which should not be obvious to a person, who is an expert in that field. The invention should have an industrial application.

Disclosure of an invention is a critical step in a patent application. Details of the invention have to be described in the application and then made public.

World trade organization member countries will require

the patent applicant to disclose details of the invention and they may also require the applicant to reveal the best possible method of carrying it out. Further, the government can refuse to grant patents for three important reasons, inventions whose commercial exploitation needs to be prevented to avoid the threat to natural flora and fauna. Certain diagnostic and surgical methods and certain plant and animal inventions under article 27 of the Intellectual property act are prohibited. Filtering this information from millions of applications is a herculean task. Here Artificial intelligence can reduce the lead time considerably and avoid mistakes in data processing through human errors. Thus, the accuracy will help in arriving at a good decision.

II. OBJECTIVE

The principal objective is to provide an amicable process for massive data management in the form of application through the use of artificial intelligence. The paper attempts to list the methods to reduce the lead time of the patent application process with the utilization of artificial intelligence and machine learning. Management of exceptions in the patent process under article 27 through the use of artificial intelligence and machine learning.

III. PATENTS

The term Patent refers to an exclusive right given to an innovator to use a particular innovation created by them at their discretion. The patents act 1970 is a key to industrial development in India. The basic philosophy of the act is that patents are granted to encourage inventions. Patents ensure that the inventions are used for the development of industry and production at the commercial scale. Patent law is made TRIPS compatible. It protects the intellectual right of an inventor and prevents infringement. Infringement is a term used to describe the Rights of an inventor that are performed by a party without permission from the primary author or innovator.

A. Patenting Process:

An application (section 7) of a patent is made to a controller of the patent without claiming any priority in a convention country or without any reference to other applications under process, Detailed process is cited in appendix 1. Patent application to examination and publication takes around 18 to 24 months. This lead time can be considerably reduced using AIML. This technology can immensely influence and ease the process of prior art search. This involves searching various publicly available sources to find out whether an invention is previously published or has any reference or resemblance to the application under process. This ensures the three important norms of patenting are satisfied.

IV. ARTIFICIAL INTELLIGENCE

The term artificial intelligence was coined by John McCarthy, an innovator in the field of computer science during the 1950s, affectionately known as “the father of artificial intelligence”. It is defined as “the science and engineering of making intelligent machines”. This technology aims to enable computers to make “Human-like” decisions to efficiently manage large processes without human intervention. Although artificial intelligence is the latest buzzword in the world of technology, its fundamentals are based on age-old mathematical formulae and algorithms that have existed from time immemorial. These mathematical formulae have been formulated into computer algorithms and are put into use in sectors such as Health care, Finance, and commercial business with large, time-varying complex databases that are difficult to be efficiently managed by human capabilities. Computers are now able to make decisions and also predict plans of action. This ability could be a great breakthrough for processing intellectual property-related documents.

Most commonly used machine learning tools are Natural language processing, Big Data, Blockchain, and robotic process automation.

A. Natural Language Processing

This branch of artificial intelligence deals with the ability of a computer to detect, read and interpret the text to make effective decisions. Essentially, a Natural language processing model uses pre-available data such as e-books, paragraphs, and other digital sources to “learn” the pattern and match new data to the said pattern. Models can identify keywords, tokens, grammatical styles, and language detection and infer the presence of certain details based on machine learning. These aspects can help in identifying documents and applications for copyrights and patents and also check whether the documents contain all the required details and

analyze them. Algorithms can automatically detect the relevant information from applications to validate the given information and approve the application. These algorithms can decode the meaning of a text to ensure that the same content is not present in any other document in the same or different word order or with the same meaning.

B. Big Data Analysis And Processing

Bigdata analysis deals with handling very large datasets that are of different structures and content. These databases often receive massive time-varying content.

In the case of intellectual property rights, applications from around the world are received in varying frequencies. It is an ordeal to manually process and classify documents and further scrutinize them for novelty. Further, several applications and registrations are received by organizations like the world trade organization for the renewal of Patents

and registration of intellectual property rights. By the use of Big Data analysis, several of these documents can be easily categorized automatically according to the field of innovation and can be further interpreted by using natural language processing.

C. Robotic Process Automation

Several aspects of scrutinizing documents and applications for intellectual property are monotonous, time-consuming, and exhausting. Several of the approval processes of patents, copyrights, and trademarks can be automatically performed by "software robots" that are a set of commands that repeatedly perform the same task. The process of employing these "bots" is known as robotic process automation.

Automation of processes related to approval of patents can effectively reduce the amount of time required to Acquire intellectual property that can boost the usage of innovations at the earliest. This will play a major role in the overall development and allow humans to mitigate emergencies, especially in the field of medicine, health care, and consumer-based businesses.

D. Blockchain

Keeping track of all the documentation related to intellectual property rights and keeping records based on timelines can be done by employing blockchain technology.

Blockchains are systems that store data in a manner such that data once written, cannot be altered, deleted, or tampered with. As the name suggests, it is an interlinking of blocks that store permanent data. Each block is a result of a complex hash function that is linked to a previous hash function, forming a chain. This technology can be employed to keep track of existing patents and innovations along with their timeline. This would ensure that no records are lost and also ensure that an intellectual property holder is guaranteed their rights. Since the blockchains cannot be altered, no innovation can be misused or plagiarized, and detecting such frauds becomes more efficient.

V. APPENDIX 1

Stages	Actions
Identify an invention	uniqueness
Prior Art searches	Periodicals, patents, products
Patent specifications	Titles, inventions, drawings
Ascertaining ownership	Ownership claims
Filing the patent application	Payment of fee
Prosecuting through the patent office	For IP grant
Patent registration	Renewals

VI. CONCLUSION

Tools and algorithms that assist in assessing and qualifying the innovations are important in the

development of an intellect-based economy. Artificial intelligence can considerably reduce the amount of time taken for an invention to commercialize. This marriage between machine and innovation can reduce a great amount of human effort in processing applications such as Patents, Copyrights, and trademarks. This will result in better implementation of the latest innovations and better handling of world crisis

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ANNEXURE

A. Important Abbreviations

IPR - intellectual property rights

AIML- Artificial intelligence and machine learning.

WTO - World trade organization

TRIPS- Trade-related aspects of intellectual property rights.

NLP - Natural language processing.

VIII. BIOGRAPHY



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