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**RESEARCH TOPIC : APPLICATION AND IMPLICATION OF AI IN COPYRIGHT AND PATENT LAW**

**Chapter I: An study of AI ideas**

**INTRODUCTION**
The title of this study makes it clear that it is about artificial intelligence. It talks about how artificial intelligence has changed from ancient times to today's digital world. It also talks about important AI issues like historical development, meaning, description, features, and functions.
Computer scientists, lawyers, philosophers, and people who study ethics and law are all very interested in artificial intelligence. Not just in sci-fi, it is now a part of our everyday lives. AI makes our lives easier and helps the world's biggest issues get solved.
That's how electricity and steam engines changed the world. EA is now a strategic tool for the 21st century. Future will depend on how our AI managers run things.
There are two main groups of ideas on artificial intelligence around the world. One group believes that AI will make society better by making people's lives better, while the other group fears that it will lead to computer rule. The expert will look into artificial intelligence and judge how useful it is for society.
Artificial intelligence (AI) grew when experts realized that some jobs needed a lot of processing power and mental strain. That's when they realized that you can only control people's thoughts so much and that smart systems should act smartly.
In general, artificial intelligence is the branch of computer science that creates machines that think and act like humans. AI is getting better so quickly that it may be able to be used right now. Siri was added to improve the quality and production of Apple's present products. Google and YouTube both used face recognition. Sophia, a humanoid robot, was given citizenship by Saudi Arabia in 2017. Artificial intelligence is now a part of everyday life; words like "neutral network," "deep learning," and "machine learning" are even found in books. Smart computers are used in building, writing news stories, poetry, music records, and architecture. These things can be made by advanced AI better than by people. AI lawyers, AI doctors, court systems, security systems, traffic control systems, and lifelike faces are now all available, along with self-driving cars. These are just a few of the many changes that are happening in the world.
In this way, AI-driven industries are growing, but they also bring some IP system problems that need to be looked at in this study. This chapter looks at a number of AI ideas.

 **How AI Has Changed Over Time**
Artificial intelligence is a modern idea, even though it has roots in the past. The people who wrote in the past would never have thought that their ideas would lead to artificial intelligence. The past of artificial intelligence can be summed up by the steady rise of human cognition and skill that can be understood by computers. Thanks to expert systems, natural language processing, and robots, AI can now handle more human experience and behavior.
Arguments and debates slowed down the growth of AI. Some writers see it as an attempt to make more people, while others see it as machines acting in ways that look like humans. So, the researcher thinks that a basic study of this amazing trip through the imaginations of past thinkers will shed light on artificial intelligence today.
When you look back at AI's past, you can divide it into two stages:
**1**. The first part talks about how AIS has changed since ancient times until John McCarthy introduced AI in 1956.
**2**. How AIS has changed since John McCarthy
Chronological analysis makes this development clearer.

 **Old AI development**Aristotle, an ancient Greek scientist, came up with logic, which is now used in logical analysis and artificial intelligence. His work in logic led to the creation of artificial intelligence by mathematicians and philosophers, which was very exciting.
In 1308's "Ars Magna," Catalan Poyet used combinations to show how people thought. A German mathematician and philosopher named Gottfried Wilhelm Lebanese followed him in 1666. He created a way to work with ideas instead of numbers and wrote a paper called "Dissertatio de arte combinatorial" in which he explained that ideas are just combinations of simple ideas. Did he try to make the language of mathematical thinking that mathematicians use today more formal? He is good at propositional logics, which are important for study into artificial intelligence, but he can't come up with a universal language for reasoning.
Boolean algebra was made by the English scientist George Boole with the same reasoning. This method is still used by computer scientists and electronic engineers to make logical gates on silicon chips that say "A is true" or "A is true but B is false."
Logic was used by Charles Babbage to make the first computer, the analysis engine. Che didn't manage to make a real computer, but his ideas were used to make a computer that was based on the Atanasoff Berry Computer (ABC) of the 1940s. Scientists today are interested in making an electronic brain based on this coded digital computer. A lot of electrical computers had been made by the end of the 1950s. Next came vacuum tube computers. This is what made it possible for the current digital computer, which is the basis of artificial intelligence. [[1]](#footnote-1)

 **Recent progress in artificial intelligence**
In the second stage of AI's development, there have been many ups and downs. It didn't have enough money because neither the government nor businesses trusted it to grow. As well as this, it was called "AI winter," but experts didn't let that stop them from working. In general, the different stages of the growth of artificial intelligence could be put into:
Early stages (around the middle of the 17th century to 1930)
2. Between 1940 and 1950, AI first appeared.
3. From 1950 to 1970, the blossom stage for artificial intelligence
4., the AI winter of 1970–1980
5. The birth of artificial intelligence again (1980–1987)
6. Unfortunately, there was yet another winter of AI from 1987 to 1993.
7. From 1993 to 2016, AI grew a lot.
8. 2016 to the present day: all about AI

 **How artificial intelligence was born (17th century to 1930)**
From the mid-17th century to the 1930s, artificial intelligence (AI) experienced significant growth. Charles Babbage's ideas about how computers should work led to the creation of modern computers, with Ada Lovelace arguing that analytical engines could not originate anything. However, this was later discovered to be artificial intelligence.

Some significant events during this time include Jonathan Swift's "Gulliver's Travels" in 1726, Nikola Tesla's radio-controlled boat in 1898, and the Haudina Radio Control Co.'s radio-controlled car in 1925. Robotics also saw progress, with Fritz Lang's first sci-fi movie featuring a robotic girl named Maria in 1927 leading to the creation of the robot letter. In 1929, Japanese scientist Makoto Nishimura created Gakutensoku, a robot that could move its head and hands, change its facial expressions, and learn from nature using AI.

The birth of AI began after two and a half decades of development. This period is known as the "birth" of AI because World War II accelerated technology progress and the goal of combining human and machine skills led to similar growth. Alan Turing, often called the "father" of AI, was an important AI researcher who asked the question "Can a machine think?" This led to the development of smart robots.

Some significant changes in AI over time include the Atanasoff Berry Computer (ABC), published by Warren S. McCulloch and Walter Pitts in 1943, Edmund Berkeley's book "Giant brains or machines that think," and Alan Turing's "Computing Machinery and Intelligence" in 1951. Turing proposed the "imitation game" and the "Turing Test," which showed that a machine is intelligent if it can have a conversation with a human interrogator without being able to tell it is a machine. The first artificial neural network, called SNARC (STATISTIC NEURAL ANALOGUE FREE ENFORCEMENT CALCULATOR), was made IN 1951

 **Thoughts on AI**
It's hard to answer the basic question of what artificial intelligence is. People have very different ideas about what intelligence is. Machine intelligence and human intelligence are not the same, so there's no reason to think they are.
To put it simply, artificial intelligence (AI) is thinking that doesn't have a biological base. But what is intelligence? I think that both artificial and human intelligence are vague, and this has been a problem for philosophers, psychologists, and biologists for decades.

 **What Artificial Intelligence Means to Different People**
Anything man-made or synthetic that looks like something real is called "artificial." Usually, people choose artificial products over natural or actual ones. For example, an artificial flower made of silk and wire that looks like a bud or bloom can be a beautiful decoration for a home or business, even though it doesn't need sunlight or water to live. An artificial flower can look a lot like a real flower, but it doesn't feel as good. In the same way, artificial intelligence can be faster and more accurate than human intelligence.

**THE INTELLIGENCE OF ALL HUMAN BEINGS**
There is no agreement among experts from different fields because it is clear that human intelligence can't be exactly defined. Most definitions say that human intelligence is similar to computer processing in many ways, such as the ability to answer questions, deal with new situations, come up with solutions to different problems, and so on. These similarities can be used to improve intelligence. However, it is still hard to tell the difference between human intelligence and computer intelligence.
According to R. Sternberg, intelligence is "the mental capacity of a person to learn from experience, to think clearly, to remember important facts, and to handle the challenges of everyday life."
Let's look at an example. On standardized tests, we've all seen questions that asked us to come up with the next number in a series of numbers, like 1,35,7,9 Gehrites. We know that there is a two-digit gap between each number, so the right answer is 11. These kinds of tests test your ability to spot important parts of trends. Experience helps us spot trends.

 **Characteristics of Intelligence**
Since the late 1980s, most people agree that intelligent thinking is made up of a set of traits such as communication, internal knowledge, terminal knowledge, gold-driven behaviour, and creativity. You could say that machines think like human brains and brain objects by comparing these traits to both human and machine brains. This is because when a brain makes a decision, it uses information that humans have learned from experience and stored in memory. In the same way, artificial intelligence uses neural networks to copy human intelligence and process the data.

**Chapters 2
Patent law problems affected by AI**A lot of changes are being made to the US copyright system to keep up with how quickly technology and society are changing in artificial intelligence. These changes are meant to help AI reach its main goals while avoiding bad social, economic, and moral effects.
The impact of AI on copyright has been the subject of academic debate and guidance. We can think about a selfie monkey court decision. In 2016, the US copyright office changed its definition of authorship to say that it would not register works that were made by a machine or a big mechanical process that worked randomly or automatically. Copyright law only protects Playboy goods that are creative and intellectual. We don't know much about how AI might change US copyright law.

**Standard for What Qualifies for an AI Patent**
It was easier to get an AI patent in 2014, even though the US issued more patents in that field. This is because patent table subject matter law got tighter.
This study talks about the controversial question of whether AI software is patentable subject matter. Hey might have a bigger effect on society than current smart software, so we need to have more discussions about how it will affect new ideas, morals, and the business. "The risk of getting these questions wrong is highest for some of today's most important inventions, including in computing and artificial intelligence," Federal Circuit judge Richard Linn notes.

 **The Legal Framework for AI Patents**
According to Section 101 of Title 35 of the US Code, a patent table subject matter can be a new and useful method, machine, process, composition of matter, or change. The US Supreme Court said, "They are the basic tools of scientific and technological work," and that giving one company exclusive rights to use those tools could stop new ideas from coming up. You can't patent abstract ideas like natural events, mathematical algorithms, or the rules of nature.
The last one was Alice Corporation Pty. Supreme Court. Ltd. V. CLS Bank International made it harder to get patents for computer-implemented inventions or software. The federal circuit and several lower federal district courts have read and applied the landmark Alice decision to throw out patent claims for things that could be done by a "ordinary mental process" or with pen and paper. The only exceptions are claims that specifically describe ways for technology to do a job that people used to do. [[2]](#footnote-2)
The way the law works now doesn't work with AI property because AI acts like humans. The case is Purpredictive Inc. v. H20. The Northern District of California Health Court said that the claims in US Patent No. 8,880 were "directed to a mental process and the abstract idea of using mathematical algorithms to perform predictive analysis." When it was found that the patents don't actually make computers better, the court threw out the claims because they were directed to patentable subject matter.
The patent planes in Blue Spike, LLC v. Google Inc. covered a general purpose computer implementation of "an abstract idea long dwelling in the human mind." They tried to model "the highly effective ability of humans to identify and recognize a signal on the computer," but the court threw out the claims after more research.
It's getting harder for patent owners and candidates to defend their claims or show AI trends during prosecution.

**Analysis of the Current Legal Standard**
Patents are crucial in encouraging innovation and creativity, but there are differing opinions on whether software rights should be patented. Some argue that patent planes can either create new things or copy human actions without creativity. The economic, social, and moral effects of giving property rights to AI should consider AI-specific factors rather than software-specific ones. Some fear AI could replace jobs with machines, while others believe it will have a similar effect. AI patent holders could receive more benefits if they can come up with better ideas on its own. Changing patent law could give too much power to AI, making the risk of economic, equality, and pay gaps seem smaller. The US patent system, built on practical and financial ideas, only allows people to patent ideas made by humans.

 **Things to note about patentability**

The question of whether artificial intelligence inventions can be patented should be examined to determine if patenting these inventions will help the patent law system achieve its main goals. Some argue that patents may hinder creativity and slow progress, while others believe that more rights for AI technologies could raise prices, create monopolies, and make it harder for new businesses to start up. China's New Generation Artificial Intelligence Development Plan emphasizes the importance of promoting AI intellectual property rights, but promoting AI inventors has received less attention.

Patents on AI-generated ideas may lead to more creation, but they may negatively impact future human innovation as autonomous algorithms code result in the atrophy of human intelligence. This could potentially kill off R&D-heavy industries or high-quality R&D jobs. Some argue that patenting innovations made by AI should be thrown out entirely.

The US Patent Act, which talks about inventions and patent rights in terms of what people make, does not require people to have control or influence over the idea process to get a patent. The public's view on how fair and valuable it is to respect human work and encourage human invention gives the person who invented the patent rights first ownership.

The US Copyright Office does not protect computer-made works, so patents can only cover ideas that people came up with. Since the idea of inventions made by AI is relatively new, there was no immediate need to specify that the process of invention was done by people. The US Congress or courts have not yet stated whether ideas created by AI can be patented.

People must be held responsible for artificial intelligence, as unexpected things can happen when AI develops without direct supervision. Talks should include ways to make people responsible and ways to help AI be open and responsible.

**3.5 Questions to Ask About Inventorship**
Who should be recognized as the creator of inventions that were made entirely by AI is another important question. The current law, Section III.B.

The debate over patenting artificial intelligence (AI) and naming AI as inventors is ongoing. Some argue that patenting computational inventions and naming AI as inventors align with the constitutional reason for patent protection, as it would allow AI to be considered a legal company or person, which is not allowed by US law. However, it is crucial to consider whether allowing inventorship will help the property system. AI, unless it is AGI or a super-intelligent AI with true consciousness, may not be motivated by the prospect of a patent and can continue to generate new ideas without any push from inventorship. The second choice is to not name any inventors, as the current law names inventors but the patent system can be changed to allow AI inventions to get patents without naming a creator. The arguments focus on the expected invention and its moral and financial effects.

**6.1 CONCLUSION**
AI is transforming intellectual property (IP) systems, impacting areas such as copyright, law, healthcare, transportation, security, and the court system. Copyright laws traditionally recognize human authors, but AI-generated works often meet all conditions for copyrightability under current laws. The COVID-19 pandemic has highlighted AI's potential in data processing and medical research, but the Indian Copyright Act is outdated and doesn't cover who owns and protects AI-generated content.

A competitive legal framework is needed to balance technological progress with economic incentives. Without copyright protections for AI-driven industries, people may be less likely to invest in AI research and development. Additionally, AI-generated works may not be published or used enough, making it harder for people to access new content. This is a significant problem in India, where the shift to AI-driven technologies is still happening.
India's policy think tank, NITI Aayog, acknowledges AI's importance in infrastructure, education, healthcare, and healthcare but hasn't come up with a complete solution for AI-generated intellectual property rights. The lack of clear rules makes it harder for both AI creators and users to fully utilize the technology. The World Intellectual Property Organization (WIPO) has begun discussions to address the effects of AI on copyright law around the world, but many countries haven't presented clear positions on AI authorship.

The issue of AI copyrightability is a complex one, with different legal systems having different definitions of originality. UK copyright law requires a work to be the author's "own intellectual creation" with a human contribution, while the US requires a "modicum of originality," meaning a minimal level of creativity. Indian courts have taken a similar stance, requiring a "modicum of creativity" while considering the "sweat of the brow" doctrine, which stresses effort and skill. However, the courts have not yet made a final decision on how to protect works made by AI, making it unclear how to protect them.

**Suggestions**
The Indian Copyright Act of 1957 should be amended to recognize literary, artistic, and dramatic works created by AI, ensuring copyright security. The law needs to properly define the term "computer-generated works" and clarify if AI-made works are considered "computer-generated works."

Works made by AI should be considered copyrightable due to their originality and creativity. Copyright should be given to the author, not the AI itself, as AI is not a legal person. The "work for hire" idea and co-authorship rules determine who owns works made by AI, with the coder, user, or AI owner being the first owner.

Both TRIPS and the Berne Convention state that AI-generated works belong to the people who made them. To help state laws follow these rules, a technical meaning of ownership should be added to both treaties.

1. Geneviève Fieux-Castagnet and Gerald Santucci, 2019, AI: A Civilizational Challenge, A Generational D12 Big Tech Géopolitique, September [↑](#footnote-ref-1)
2. [↑](#footnote-ref-2)