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Define artificial intelligence outcomes as intellectual property collective right

Defina os resultados da inteligência artificial como direito coletivo de propriedade intelectual

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Abstract

AI programs are widely used and AI-generated programs to impulse innovations are not entitled to AI property rights. There is a difficulty in including the AI as the autonomous author of an innovation process. The research seeks WIPO's advice and AI general trend experts' discussions and tries to dig into definitions and meanings. The results clarify differences between AI uses for intellectual property copyrights and business patents or AI cultural, social, and commercial impacts. The research shows the mainstream explication because AI is not entitled to the owner of an IP. The paper examines all these cases and performs a summary framework orientation, concluding that the IP system must change and allow AI to make intellectual rights a collective right.

Keywords: Artificial Intelligence. Intellectual Property. Innovations. Collective rights.

Resumo

Programas de IA são amplamente utilizados, e programas gerados por IA para impulsionar inovações não têm direito à propriedade da IA. Há uma dificuldade em incluir a IA como autora autônoma de um processo de inovação. A pesquisa busca orientações da OMPI e discute tendências gerais com especialistas em IA tentando explorar definições e significados. Os resultados esclarecem as diferenças entre os usos da IA para direitos autorais de propriedade intelectual e patentes comerciais, além de impactos culturais, sociais e comerciais da IA. A pesquisa apresenta a explicação predominante de que a IA não é titular de propriedade intelectual. O artigo examina todos esses casos e realiza uma orientação de quadro resumido, concluindo que o sistema de PI deve mudar e permitir que a IA transforme os direitos intelectuais em um direito coletivo.

Palavras-chave: *Inteligência Artificial. Propriedade Intelectual. Inovações. Direitos coletivos.*

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1. INTRODUCTION

1.1 Object and aim of the paper

In the actual context, AI benefits from the increased computational speed and capacity of new processors. These allow new algorithms to be performed faster and replicate or simulate a chat between humans and machines. So AI, today and in the future, will be fundamental to support innovation creations. WIPO conferences worldwide discussed relationships between Artificial Intelligence (AI) and Intellectual Property (IP) rights systems protection. The IP system of rights defines who the registered owner is, what the registration object is, and where the registration takes place.

AI and AI applications are not disruptive innovations but mostly allow research development. The AI model started more than fifty years ago and has different approaches because of computing processing power growth and the development of data science based on statistic models that are adding network capacity called machine learning. The impact of AI is the overall growing use of statistic decision models by increasing the speed of fast-growing data science.

Artificial Intelligence is a toolset for making computer software respond to questions and perform tasks. AI programs develop limited autonomous decisions based on rules. AI application examples are humanoid robots, unmanned cars, and even software that suggests music. Automated processes use AI for technical and commercial purposes without human interfaces. The decisions made using AI are more formatted and better formulated because they pass through a complex analysis called deep learning that uses machine learning methods plus neural or network support methods.

AI is used to perform autonomous decisions in industrial processes. However, it has great commercial success because it mimics the machine's interaction with humans. The communicative performance of AI today allows people with no computational skills to use AI. So great AI attractiveness is user-friendliness, which will speed up its use. Finally, AI is used in the creative process because it performs autonomous processes starting from a request and expecting results to conform to different styles.

A weakness of all AI programs and AI-generated outcomes is the not-transparent use of databases on the internet, which implies a lack of other information and the quality of the results that depends on which information is elaborate. European Act (EU 2024) defines risks of no-transparency. So it is not an engineering or data science problem but the awareness of the AI model, the results, what are the data, and for what outcome is the expected result.

This paper focuses on AI intellectual property (IP) or the register of outcomes from AI applications on the innovation process. The goal here is to clarify a frame to discuss the practical use of this tool and the future of the AI application on Intellectual property and its challenges. The research is justified to clarify the discussion about AI its growing use and the property of AI program outcomes.

The discussion’s results support the thesis: AI IP rights registrations as a collective right. AI's impact on intellectual property rights seeks a future scenario when almost generative AI could be the owners of property rights, like an association or a legal subject. It will be possible to use massive AI outcomes to overpass the traditional research process based on human creativity alone. A new way to grant property rights using AI must include people and all technology support to share property rights. It does not mean to define machine rights but a new way to innovate and grant rights

combined with different components and generally human knowledge as the base of all innovations.

1.2. Methodology

The aim of the discussion is that the AI generation of knowledge and part of innovations must be recognized as a collective human knowledge and process innovation as human and software combined outcome of research, being AI the part that filters the collective human knowledge.

The paper uses a deductive and comparative method based on bibliographic research to clarify the relations between intellectual property and Artificial Intelligence. The research started in late 2023 and early 2024 through the Internet. The primary databases analyzed were WIPOs and governmental agencies' IP sites. European Union approved the AI Act in March 2024 that could define future boundaries and controls of AI use.

There are legal issues to be solved in the IP system today to identify the impacts of AI tool uses on the innovation process of IP system of rights protection and AI general use today. The research aims to clarify as secondary objectives of the paper the following questions:

- WIPO IP system approach to AI
- Uses of AI in the innovation process
- Actual discussion of AI as an owner or tool in a property right

The concluding result resumes the mainstream position as AI's IP rights owner and AI innovation process tool. The paper summarizes AI problems as IP tools used in innovation processes. The discussion explains the issue of allowing AI to be eligible for ownership and IP registration. The discussion shows also how the ethical question of AI as a legal subject is complex. The final section praises the legal solution from the economic theory of goods that identifies AI innovation outcomes as collective goods. This definition allows us to define a special IP right that, we argue, allows the IP system to deal with the use of AI in innovation.

2. **DISCUSSION**

The paper's discussion is divided into sections. The first section summarizes and explores the AI definition, the second explores the WIPO discussion about AI and IP systems, the third explores AI-IP relations issues, and the fourth summarizes the European AI Act, the final section suggests one possible definition of AI property rights different from the actual framework.

2.1. **Artificial Intelligence (AI)**

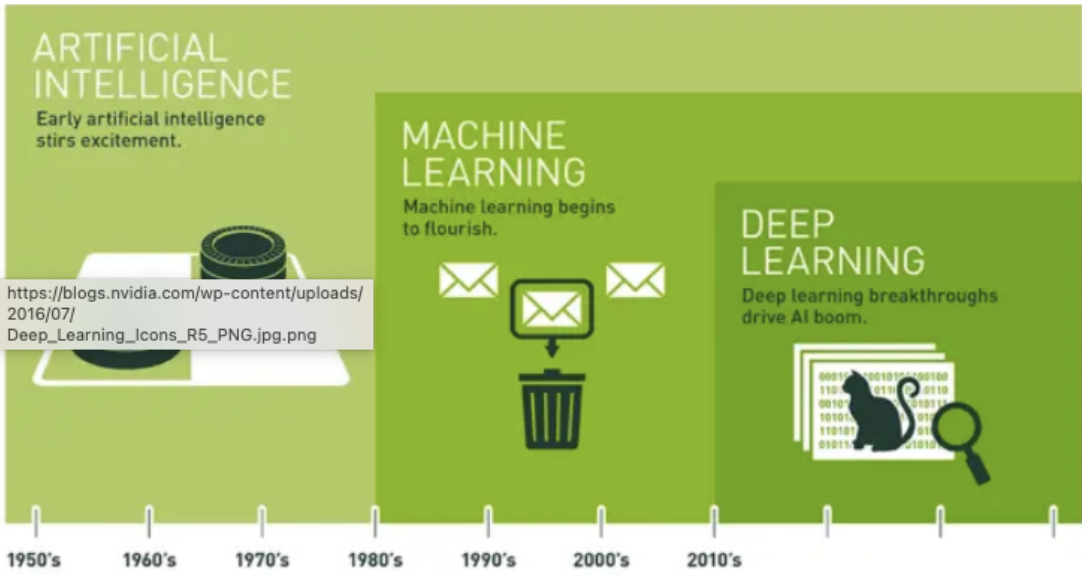
Late in 1950, Alan Turning wrote the question: can machines think? Should change by whether or not machinery can show intelligent behavior? He created the Turing test and measured the machine's ability to simulate human conversation (LOLLI 2007). Doing that does not matter if it is thinking as we observe the result. AI approach shifts today to seeking intelligence problems with measured solutions (SIMON 1981).

Following Russel and Norvig (1998) Turning's AI definition works in terms of acting (having a conversation) and not thinking or deciding. So Russel and Norvig were critical that the test could compare machines to people. Artificial intelligence is not, by definition and structure of programs, a simulation of human intelligence. Thus McCarthy (1950) defined Artificial Intelligence as the computational part of the ability to achieve goals, and Minsky (1980) similarly defines it as the ability to solve problems.

Google today adopts an approach to measure the ability of systems to synthesize information similar to biological intelligence.

Whatever the approach, for a general definition of AI, the fact is that what is called AI, is a group of software programs and special programming rules that are consuming more computing resources (FEIGENBAUM and FELDMAN 1963, HAUGELAND, 1985, KURZWEIL 1990). The AI model must be able to perform research, learn from the research data, and to be able to classify it. Then AI process uses the data to prioritize the path of successive routines to activate other searches till a conclusion. It doesn't mean it is a unique conclusion or the optimized outcome expected. The AI result of a model is not even a result. AI tools cannot deliver a definitive outcome. A case of having no result happens when AI has no data, for example, about someone, or when cannot be used for some reason, some data collection when the search makes no sense.

Like Human Intelligence, Artificial Intelligence cannot solve all problems and answer all questions and certainly can't have a correct reply to our questions. It is an extension of human knowledge and a means of possible results. AI applications have some benefits like a fast reply to middle-level and quantitative questions, the knowledge of thousands of manuals and academic textbooks to create a good canvas of arguments for basic research, reliability for mathematic problem solutions, saving time, and giving more information than every human could be able to do, due to thousand and millions data stored in the internet that are impossible to be scanned in



short by every human
Source https://blogs.nvidia.com/blog/whats-difference-artificial-intelligence-machine-learning-deep-learning-ai/

As shown in the figure above, the main components of an AI model are:

- Engineering process of extraction or identifying a minimal set of informative features or attributes from the provided dataset. The AI model includes the performance of machine learning processes. Deep learning architecture has hidden layers between the input and output layers. These models employ supervised program steps to train

with well-labeled datasets. High-performance parallel-computing GPUs can drastically reduce The performing time of the model.

- Artificial Neural Networks that comprise weighted interconnections. The use of AI programming language, an Artificial Neural Network between the set of computing nodes at consecutive layers. There are algorithms to define the optimal weights of connections deduced in the learning phase. Technically, each node calculates the weighted sum of values propagated to its input. An activation function regulates the criteria for computed values to feed forward to the next layer. So the process goes on using a series of steps. It is a recursive process that works on constituting feed-forward and back-propagation stages, weights, and other network parameters. The processes converge to optimal values and end up with the most appropriate model.

The outcome of these processes has, as was said, some weaknesses. The main are:

AI uses algorithms that only simulate a learning process. Is not a human learning process, but, as a human outcome, an AI-resulting model could be wrong, or if the conclusions make no sense or a bad sense. Inside the machine learning process, there is a black box. Nobody knows how the model outcomes during the process. Only the AI could explain every step.

AI is essentially simple. It can work with a large amount of data but fails in the reason and purpose of the work purpose. So AI can substitute humans in well-defined problems with defined outcomes and proves successful in games like Chess or in finding mathematics solutions. However, it fails when integrated into reality. The same happens when adding ethics, social, and human variables to solve a problem.

Cognitive and sensorial information (to give AI sensors like in unmanned car systems) like a learning biological form could improve actual AI models. Many experiments are today developed in many fields, as well as their use in human activities. The economy, society activities, and professional work are using AI. An integration between Human and machine intelligence (or sensor) is something today developed with digital extensions to humans like watches and glasses.

2.2. WIPO system

Intellectual property (IP) refers to creations of the mind, such as inventions, literary and artistic works, designs, symbols, names, and images used in commerce. National and international law protect Intellectual property. However, the classification varies all over the world (WIPO 2022)[2] .

The World Intellectual Property Organization is a specialized agency of the United Nations responsible for promoting and protecting intellectual property (IP) worldwide. WIPO provides a framework for international cooperation in intellectual property. It administers various treaties and conventions that harmonize IP laws across different countries.

Here are the main types of intellectual property defined and protected by WIPO:

-Patents: Definition: A patent is an exclusive right granted for an invention, a product, or a process that provides a new and inventive solution to a technological problem. Protection: Patents grant inventors exclusive rights to make, use, and sell their inventions for a limited period, usually 20 years from the filing date.

[2] https://www.wipo.int/edocs/pubdocs/en/wipo-pub-455-2024-en-guide-to-the-madrid-system-international-registration-of-marks-under-the-madrid-protocol.pdf

-Copyright: Definition: Copyright protects the rights of creators in their literary, artistic, and musical works. That includes books, music, paintings, sculptures, films, and other forms of creative expression. Protection: Copyright provides the creator with exclusive rights to reproduce, distribute, perform, and display their work. The protection typically lasts for the lifetime of the creator plus a certain number of years.

-Trademarks: Definition: A trademark is a distinctive sign that identifies and distinguishes the goods or services of one party from those of others. Trademarks can include words, logos, symbols, and other elements. Protection: Trademarks protect the goodwill and reputation of businesses by preventing others from using similar marks that may confuse consumers.

-Trade Secrets: Definition: Trade secrets are confidential business information, such as formulas, processes, and methods, that provide a competitive advantage.Protection: Unlike patents, trademarks, and copyrights, trade secrets are protected without registration. Protection is maintained as long as the information remains confidential and measures are taken to keep it secret.

-Industrial Designs: Definition: Industrial designs refer to the visual design of objects, such as the shape, surface, or ornamentation of a product. Protection: Industrial design protection grants exclusive rights to the visual aspects of a product for a limited period. Typically from 15 to 25 years.

- Geographical Indications: Definition: Geographical indications identify products originating from a particular place and having qualities, reputation, or characteristics that are essentially attributable to that place of origin. Protection: Geographical indications protect the rights of producers and prevent the use of misleading indications on products that do not originate from the claimed place.

WIPO does not provide direct protection for specific outcomes generated by artificial intelligence (AI). Different types of intellectual property may intersect with AI outcomes as follows:

-Patents: WIPO facilitates international cooperation and harmonization of patent laws but doesn't grant patents directly. The patentability of AI-related inventions is subject to national patent laws.

-Copyrights: Copyright protection typically applies to original works created by human authors. The eligibility of AI-generated works for copyright protection can be complex, and many countries, including the United States, often tie copyright protection to human authorship.

-Trademarks: Trademarks are generally associated with human-created symbols, names, or signs that identify and distinguish goods or services.

-Trade Secrets: Trade secrets, including those related to AI algorithms or processes, are protected by keeping the information confidential. WIPO does not provide direct protection for trade secrets.

-Industrial Designs: Protection for AI-generated designs would typically follow national or regional laws.

-Geographical Indications: Protection for geographical indications involves adherence to specific national or regional laws. There are no AI intersections here.

WIPO and the international IP system today generally deny AI's innovation owner eligibility for intellectual property certification. As a general rule (WIPO 2022) WIPO denies registration of AI outcomes being AI the owner. That is because the innovation process could be defined as a step-by-step process. It doesn't mean that humans could patent innovations generated by AI models.

There is an ongoing debate about whether those frameworks and systems need to be modified for machine-created inventions/works. In broad terms, the discussions regarding machine-created inventions/works are focused around:
-potential protection for the actual machine-created work/invention itself. That tends to focus on whether AI is an inventor or creator within the existing IP frameworks.
-potential protection of the AI algorithms and software.
-potential rights concerning the underlying training data and data inputs.

There is also a debate about the line between human creation and machine creation, and how much / how little human input or guidance may be required. The human connection to AI outcome is mandatory. The registration can be done only through private or legally registered organizations. AI itself is not eligible to be a person or an organization. Intellectual property (IP) systems have been designed to incentivize human innovation and creation.

A final remark about collective marks and certification marks (WIPO 2007)[3]. A Collective mark is a sign capable of distinguishing the origin or any other common characteristics, including the quality of the goods/services of different enterprises that use the sign under the control of the registered owner. Typically, the owner of a collective mark is an association of which those producers are members. Certification marks are signs indicating that the goods/services have been certified by an independent body about one or more characteristics – composition, manner of manufacture, quality, origin, material, accuracy, etc.

These collective signs are similar to Geographic Indications and could be considered as a way to protect typical production and collective representations of trademarks and certifications. The protection of collective goods as natural services has a greater importance because is not conflictual with private and individual protection but, in many countries, has great significance for territory and communities and sometimes has protection priority against individuals.

2.3. **The WIPO Conversations on AI[4]**

WIPO organized AI and IP relation discussion sessions divided by themes. The first three sessions of the WIPO Conversation discussed general questions about new Technologies for Intellectual Property Administration. The fifth session looked at AI uses in IP administration and registration. It encouraged information sharing across all stakeholders. Finally, there was a discussion section for Data and IP. The fourth

[3] https://www.wipo.int/meetings/en/details.jsp?meeting_id=12762
[4] WIPO conferences 2019 and following. Available: https://www.wipo.int/meetings/en/details.jsp?meeting_id=51767

session discussed the current data debates. It covers intangible assets, how we do business, innovate, and create.

The sixth session focuses on AI inventions. The seventh session is about Intellectual Property and the Metaverse. The session looked at the metaverse and its emerging technologies: AI, blockchain and the NFTs, AR and VR technologies, the Internet of Things, and data processing. The eighth session analyzed Generative AI creation of music, images, and other forms of content.

The WIPO conversations analyze the context. Here is a summary of topics extracted from all the session summaries till 2023 presented on the WIPO site. The World Intellectual Property Organization (WIPO) doesn't present a position related to artificial intelligence (AI) because of the neutral position of the agency on AI registration rights. provides a platform for discussions and collaboration among member states and stakeholders. The paints and the presentations cover many topics, but all that research relations of AI and IP must have a look at all the material produced.

In particular, here we summarize the sessions and related issues and challenges for the IP system, innovation, and business. The general analysis focuses on the future of AI in the IP model. In that model, only humans or legal organizations could be owners of IP rights.

There is a general acceptance of the patentability of computer programs so long that they meet the traditional criteria of novelty, inventive step, and industrial applicability. That ownership conflict could be solved by defining who controls the programs of an AI model during the invention process when AI is used to produce an eligible registration. The program registration is open to AI-generated programs eligible for patents. However, this position has critics because it implies AI is comparable to human intelligence and AI could be a legal subject.

Problems with ownership are the form of evaluating the invention or the disclosure requirements. However, AI innovations are often the result of black box operations by the machine. Not having the transparency of the process makes it impossible to disclose the innovations in sufficient detail to satisfy existing laws. Companies guard training data used for machine learning because the model could be copied by a person having ordinary skill in the art (PHOSITA) and replicated. It implies losing the goal of protecting the invention (PICHT 2022, 2023)

Another problem is that AI future systems will communicate with each other by data. If only corporations could control such a process, it would enhance the responsibilities of companies that access all information and exclude privates and controls. The corporation disclosure terms that allow data treatment are proof of low protection and accountability (PICHT 2022).

AI patenting depends on the accountability of AI-enabled machines and their operator. But If an AI system infringes a patent, uses copyrights incorrectly, or uses a database incorrectly, for instance, a personal data information center against the European General Data Protection (GDPR)[5] act, who is then liable? If the system generates output autonomously are people who trained the AI model liable? If process accountability is missed it would be impossible to understand who is responsible for what.

Thus more than accountability, there is a lack of a consistent definition of an AI ecosystem and the relation between an AI ecosystem and an innovation system. It is

[5] the Data Protection Law Enforcement Directive and other rules concerning the protection of personal data available: https://commission.europa.eu/law/law-topic/data-protection/data-protection-eu_en#:~:text=The%20General%20Data%20Protection%20Regulation%20(GDPR),-Regulation%20(EU)%202016&text=The%20regulation%20is%20an%20essential,in%20the%20digital%20single%20market.

possible to define one development ecosystem and one adoption ecosystem. In other words, AI is a new way to develop invention processes, and the rights are distributed between the AI developers, that calibrate the instrument, and the inventors that use AI for a final invention to be certificated. It does mean the invention process using AI is different from a normal innovation process that is the base for disclosure requirements.

To clarify. If an inventor uses a laboratory to develop a new formula the machines that are part of the process are not entitled as part of the invention because are simple tools and can be exchanged with others without changing the final result. When a laboratory is virtual and the inventor uses AI as a virtual machine the tool is what can define the success of a process. So then the tool is part of the invention and that is an AI-generated model.

WIPO alerted that in 2020 (WIPO 2022 and congress proceeds) machine-learning algorithms and swarm intelligence represent the highest number of software patents granted. It was pointed out that over 90% of AI patent applications are presented in the IP5. That is a forum of the five world's largest intellectual property offices and are: the US Patent and Trademark Office (USPTO), the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), and the National Intellectual Property Administration (CNIPA formerly SIPO) in China.

So a crucial point to end is not only the question with development and adoption ecosystems. The Ecosystem is a process of AI-based inventions (AI as part of an invention) and AI-assisted inventions (inventions made using AI as a tool for human innovation) so in some cases de development and adoption is a complex and united process.

AI inventions consisting of novel algorithms and mathematical models are not patentable. The invention becomes patentable, with AI algorithms if an invention is considered eligible. Because training data, training processes, and adaptation methods are not transparent, the demand for disclosure requirements and the increasing request for detailed information in AI-related patent applications have led to many AI systems being protected by trade secrets that belong to corporations. Thus people-having-ordinary-skills-in-the-art (PHOSITA) should be able to reproduce the invention using ordinary technical means.

Even with some accountability difficulty in the cases of the above discussion could be released a solution. But there is also a possibility of AI autonomously generated inventions. The DABUS is a case of AI patented. The AI accommodates trillions of computational neurons within extensive artificial neural systems that emulate the limbo-thalamo-cortical loop. The model utilizes arrays of trainable neural modules, each containing interrelated memories representative of some conceptual space. An electro-optical attention window scans the entire array of neural modules in search of so-called “hot buttons,”. These are neural modules containing impactful memories and release fake synaptic disturbances into the system.

About DABUS and AI algorithms, the term artificial intelligence is an unfortunate mislabeling because there is nothing intelligent about AI. AI is a model that uses statistical optimization software to manage large datasets. There is no justify assigning rights to a machine because an AI system doesn’t work autonomously and needs all the human interaction that led to the building or operating of that system from insane to support electrical power. To say AI autonomous will exclude the manufacturers of hardware, software, and the maintenance of the systems. But it must be introduced a law for computer-generated works. The copyright is certified to the person who enabled the generation or creation of the work. Unfortunately, the same legal concept could be

applied to all patents, industrial secrets, and AI-generated product or service inventions.

A solution is AI model certifications: remove the requirement to name the inventor, name a human inventor with an accounting of any AI part of the invention process, and use a sui generis approach. The substantive requirements: owner, claims, filing date, prior art, novelty, subject matter, and exclusions must be differentiated from innovation with no AI involved.

Among all, there is also an ethical assumption. IP system provides limited-time exclusive rights to exploit the registered invention. AI invention may never become part of the public domain. IP protection means an economic incentive for inventors when AI does not need to. The good for society is the challenge to adopt AI as an inventor.

Finally, there is the problem of motivation and costs. The business practice uses AI to automate tasks that previously made a person an inventor an artist or a designer. Artificial persons or AI automated tasks substituting real people is the same as the form of corporations that employ inventors in process and own most patents. Patent protection incentivizes the inventors' employer, the corporation, to invest in R&D AI systems that substitute people in a task and the task is part of a process of R&D could be considered a corporation patent as well? That implies that there are incentives for human inventors to use AI.

From an economic perspective, IP does not allow AI-generated inventions to be patented. The economic theory views the patent system as a policy tool to incentivize investment in R&D activities because the patent royalty is a cost and a barrier to concurrency. If AI creates outputs at zero cost, those inventions would be in the public domain free. There are similar inventions from government-funded research in the United States of America because public funding provides a zero cost for private firms and is generally required to be assigned to the government to support public services. That is a hypothetical iteration of the Internet as a single universal and immersive virtual world facilitated by virtual reality (VR) and augmented reality (AR) headsets. It is the hypothesis of the Industry 5.0 claim. The human-machine link is a buzzword to exaggerate the development progress of various related technologies and projects in work processes. The term metaverse includes virtual reality, technology, Web3, and blockchain technology.

In the Metaverse, copyright laws will still apply. The Metaverse raises IP questions across the full breadth of IP rights, IP registration, and IP enforcement. The absence of clear rules and private contractual terms between platforms, content providers, and users may play a crucial role in the licensing content, and collecting royalties will introduce another layer of complexity when dealing with a multiverse of Metaverses.

Trademark protection is another economic concern. The registration and enforcement of trademarks for goods and services are today offered by virtual marketplaces offering NFT products. Based on that, started business models and several trademark infringement litigation matters like jurisdiction and applicable laws, non-commercial and fair use defenses, and the likelihood of confusion.

Virtual designs can be protected by design rights? Virtual designs such as graphical user interfaces (GUIs), icon designs, typeface designs, and three-dimensional designs raise that question. In some countries, protection for virtual designs is available, other countries have separated virtual designs from physical products. Patenting in this area can be difficult because must have a demonstrable technical effect. Software as such is usually excluded from protection.

Virtual tourism, the replication and appropriation of landscapes, traditional crafts, characters, designs, and languages that reflect cultural identity must be protected. Indigenous Peoples must have both the opportunity to express and share their traditional knowledge (TK) and traditional cultural expressions (TCEs) whether and how are used by others.

Finally the meta verse uses also digital twins. A digital twin is a virtual copy or simulation of a physical object, system, or process. It is created by integrating sensor data into computer simulations. A fully virtual world with virtual assets and transactions raises complex questions regarding applicable laws and the infringement/ enforcement of IP rights, which are territorial. Smart contracts can also play a role in facilitating the enforcement of IP and fair royalty payments, providing additional security for IP owners.

In the last eighth session of the 2023 WIPO, there is a discussion about Generative AI and new data creation similar to its training data. It is any machine learning model capable of dynamically creating output after train. The potential applications of generative AI models range from music composition and video generation to molecular modeling in drug discovery and medical diagnostics.

A recent advancement in generative AI, commonly referred to as language models (LMs) or large language models (LLMs), is due to new models well suited for correlating language. LLMs are suitable for processing sequences and maintaining sufficient memory and are designed to handle large datasets. LLMs can perform various natural language processing tasks, including text generation, language translation, text summarization, question-answering, and more.

2.4. European AI act the directive to minimize AI risks

The European AI Act results from the roadmap started in April 2021, when the Commission presented its AI Act, to ensure that AI is human-centric and trustworthy and realize the Regulation Act in March 2024[6]. In January 2024, The Commission launched the AI innovation package to support Artificial Intelligence startups and SMEs. According to the Regulation, the "GenAI4EU"[7] looks to generative AI across the Union's key strategic industrial ecosystems.

The European approach to AI enables the development of AI in the EU as strategic leadership in high-impact sectors for the benefit of industry and society. Access to high-quality data is essential in European Union-started initiatives such as the EU Cybersecurity Strategy and infrastructure for building AI systems.

To build AI's trustworthiness, the EU proposed inter-related legal initiatives such as:
1) a European legal framework for AI;
2) a civil liability framework - adapting liability rules to the digital age and AI; and
3) a revision of sectoral safety legislation. That will give AI developers, deployers, and users the clarity they need by intervening based on different levels of risk.

According to the Act (EU2024), the purpose of the AI act in Europe is to improve the development, market, service, and use of artificial intelligence systems (AI systems)

[6] It was originally proposed by the European Commission on 21 April 2021, and has been politically agreed upon by all three EU institutions (8 December 2023). The European Parliament's plenary vote on the proposed Artificial Intelligence Act is expected to take place in mid-March 2024 (according to Parliament's draft agenda).
[7] https://digital-strategy.ec.europa.eu/it/policies/ai-office

legal framework in the Union, by Union values enshrined in the Charter of fundamental rights of the European Union.

There are four categories of risk (unacceptable, high, limited, and minimal). AI transparency requirements are mandatory when representing high risks. All AI applications that represent unacceptable risks are banned. High-risk ones must comply with security, transparency, and quality obligations defined in the act. Limited-risk AI applications only have transparency obligations. The ones representing minimal risks are not regulated.

General-purpose AI added in 2023 includes foundation models like ChatGPT. They are subject to transparency requirements. High-impact general-purpose AI systems that could pose systemic risks must have an evaluation process. There are four categories of risks.

Unacceptable risk: Includes AI applications that manipulate human behavior, those that use real-time remote biometric identification (including facial recognition) in public spaces, and those used for social scoring (ranking people based on their characteristics, socio-economic status, or behavior).

High-risk: are applications that pose significant threats to health, safety, or the fundamental rights of persons. These are AI systems used in health, education, recruitment, critical infrastructure management, law enforcement, transparency, human supervision, and security. These applications must be evaluated before they are placed on the market.

Limited risk: impose obligations that aim to inform users that they are interacting with an artificial intelligence system and allowing them to exercise choices of AI usage. For example, AI applications that make it possible to generate or manipulate images, sound, or videos (like deepfakes).

Minimal risk: is a condition for AI applications of processes tasks or productivity tools. For these applications, the AI European Act suggests a voluntary code of conduct.

The risk safeguard follows the ISO 27001 / 22 approach to secure the IT ecosystem and define levels of control. The European Act is also consistent with The General Data Protection Regulation (Regulation (EU) 2016/679, abbreviated GDPR) on information privacy in the European Union (EU). The GDPR regulates privacy and human rights law. It also governs the transfer of personal data outside the EU and EEA. The Regulation contains specific rules on the processing of personal data.

In the Act, the notion of ‘AI system” is based on key characteristics of AI systems that distinguish it from simpler traditional software systems or programming approaches.

A key characteristic of AI systems is their capability to infer or obtain outcomes, such as predictions, content, recommendations, or decisions, which can influence physical and virtual environments, and the capability of AI systems to derive models or algorithms from inputs or data. The inference of an AI system includes machine learning approaches that learn from data how to achieve objectives and logic- and knowledge-based approaches that infer from encoded knowledge or symbolic representation of the task to be solved. The term ‘machine-based’ refers to AI systems run on machines.

The definition of the Act implies AI is not comparable to humans or human beings but as programming models or programs and their hardware. The AI model is hardware, software, and human capability to operate the system. According to the Act

(EU2024), the AI ecosystem is the context in which the AI systems operate. The AI outputs generated by the AI system include predictions, content, recommendations, or decisions. AI models can operate with varying levels of autonomy and capabilities to perform tasks without human intervention. Thus AI can be used on a stand-alone basis or as a component, physically integrated into the product (embedded) or without being integrated therein (non-embedded).

The Act defines the figure of the 'deployer'. That is a natural or legal person, including a public authority, agency, or other body, using an AI system. An AI system may affect persons other than the deployer. AI models must be equipped with literacy to allow providers, deployers, and affected persons with the necessary notions to make informed decisions. The affected person of an AI model must understand how decisions taken with AI, will impact them and sustain trustworthy AI in the Union.

Despite the EU's approach to artificial intelligence centers on excellence and trust, aiming to boost research and industrial capacity while ensuring safety and fundamental rights definitions such as "unacceptable risk", "social scoring" systems, or certain types of biometric surveillance, providers and deployers of "low-risk" systems, "sufficient level of AI literacy" is not very clear.

The providers of "high-risk" systems will need to iteratively "identify", "evaluate" and "address" their system's "reasonably foreseeable risks […] to health, safety or fundamental rights" (Art. 9), and establish "appropriate data governance" practices (Art. 10) and keep logs of their system's activities (Art. 12).

Another point to worry is that enforcement authorities will lack resources to investigate self-proclaimed "reduced risk" systems, which might not be of high priority. However, the Regulation includes obligatory fundamental rights impact assessments (FRIAs) within the group of duties incumbent on deployers of high-risk systems (Art. 29a) and obliging deployers to assess and mitigate a system's foreseeable impacts on marginalized and vulnerable groups.

General-purpose AI systems (GPAIs) exhibit general capabilities for many tasks rather than having one specific purpose or functionality. AI Act's final version requires a set of "minimum rules" (Art. 52c) such as (Art. 52c):

1) technical documentation;
2) documentation for downstream actors;
3) policy to respect Union copyright law; and
4) a "sufficiently detailed summary about the content used for training of the general-purpose AI model", according to a template to be provided by the European AI Office.

Moreover, Article 52a establishes as "systemic risk": a) has "high impact capabilities", "capabilities that match or exceed the capabilities recorded in the most advanced general purpose AI models", or where b) classifies a specific system as "systemic risk" when a system shall be presumed to have "high impact capabilities", if the amount of compute used for its training was greater than 10^25 FLOPs.

According to the Regulation (EU 2024), Open Source GPAIs catalyze the distribution of technology and know-how, provide a level of transparency, and the information on the model and the information on model usage that is made publicly available are exempt from compliance with the Act's GPAI regime (Art. 52c(-2)). The EU believes that the risks of the European GPAI model are low because of the transparency provided by Open-Source models.

There is a complex governance system with an AI Office, The European Artificial Intelligence Board, The Advisory Forum, The Scientific Panel of Independent Experts, and National supervisory authorities. The responsibility is with national market

surveillance authorities based on Art. 63, Regulation 2019/1020. Coordination and harmonization seem a difficult and slow process.

AI Act aims to protect individuals and societies from uncontrolled AI systems, but the European system depends on secondary or National legislation. The European "regulation" orientation avoids individual or human impacts of AI programs and does not regulate AI programs and production.

It's difficult to understand how AI produces or generates outcomes and what the AI's process production or the information rights upon the database research. Internet or copyright information used by AI is not protected by the Act. It is implicit in it that the IP system would cover these issues. Unfortunately, as we have seen before WIPO system is not protecting AI-generated innovations and productions. The ongoing process of innovation and production using AI programs will not provide IP rights to AI but to the owner.

There is a grey area in which the owner of programs and hardware has a dominant market position and decides how to register or orient AI production and AI innovation generation because it's a monopolist producer. The "deployer" is not responsible for AI programs but for the use of it.

The monopolist power of producers of AI programs and generative AI is not the price for the information or the production of AI programs but the cost of a service or the cost to make AI programs to work with. So Ai program owners provide a strong "orientation" of the market or a dominant position but orient the market by price because part or all AI programs offer is free. The European Act does not cover dominant positions and technology, and there is no question about IP property rights, but only the results and impacts on the market.

2.**5. Result: reasons to develop AI collective right**

In this section, we will summarize why we argue that AI and generative programs must have a different typology of rights in the IP system. One can easily see that the result of the analysis is the existence of a gray area in which AI is not under legal control.

The Intellectual Property System is a pillar of the economic system and protects innovations and property rights. IP system certifications grant international protection and control fraud. The IP system does not admit AI programs and AI generative as owners of IP rights because IP rights are for humans, even not only individuals. The copyrights, software registration, and industrial design will protect AI innovations and product outcomes.

Another AI regulation, the European Regulation (EU AI Act 2024), focuses on the risk and defining the boundaries of AI development to protect privacy. The European Act Regulation protects the economic system uncertainty when maximizing profits, not only individuals. All classified impact and risk definitions of AI systems help to define this changing innovation process and its agents. The relationship between AI and IP implies property rights because it measures responsibility.

We argue that the IP system and the AI protection risk are not protecting everything. What if a few corporations that have generated the AI programs and the AI ecosystem will patent or copyright all innovations generated by AI?

In other words, what will happen if a group of a few technology corporations becomes the owner of the whole stock of Intellectual Properties using AI as a main form of certificate programs, innovations, and trademarks in the future?

AI gurus claimed that AI outcomes would open a great possibility for many people using AI to claim certifications on behalf of AI and overlap the actual IP system in the future. It is possible to make it not with autonomous and human innovation but with software-based innovations. But what, if people's intellectual rights are not registered because they must register and share with AI's owner the patrimonial right?

It will be fair and useful for humanity to use, AI evangelists claim (AVENI 2023). The danger of an incontrollable proliferation of AI innovation that could claim IP right registration must be reduced or expanded on behalf of humankind. The risk to pass by is that sometimes AI uses human knowledge without paying copyrights and could use the programs to bypass individual identity protection.

When we discuss the outcomes of AI it is easier to understand the dilemma of why AI is a property rights owner in the process of innovation. The Oslo Manual (2005) defines business innovation but does not help identify the right to the process of distributed property rights into the innovation chain process.

The innovation process includes all developmental and new processes, for example, financial and commercial activities undertaken by a firm: R&D activities, engineering, design and other creative work activities, marketing and brand equity activities, intellectual property (IP) related activities, employee training activities, software development and database activities, activities relating to the acquisition or lease of tangible assets, innovation management activities.

A business innovation is a new or improved product, service, or business process introduced on the market or used by the firm (or a combination) that differs significantly from the firm's previous products or business processes (OECD 2005). Following the OECD OSLO Manual (OECD 2005) the business process innovations include six different functions of a firm. Two functions relate to a firm's core activity of purchasing, producing, and delivering products for sale, while the others concern operations such as TI, Organization, Supply, etc.

In the end, who is the innovation owner, and who can register the innovation as a Property Right? Are they the organizations that developed AI or the authors of the algorithms used in the innovation process? The solution of a preventive agreement before the patent is registered or the employment of the developing engineers is not a solution because generative AI is autonomous and not a linear process. It is part interactive and part autonomous. How does it establish ownership of an innovation produced with the help of AI generative algorithms or machine-autonomous decisions? The IP system could not avoid using AI in the innovation process and intellectual property protection. Are they Humans or organizations or massive use of AI to support humans in organizations?

A possible solution is the concept of IP of different rights types. We classified Collective marks (CM) and Geographic Indication (GI) as club property or collectivity property. Thus AI's programs and AI generative programs could be included as club or collective rights (OLSON 1971).

We must consider that goods and rights (that are immaterial goods) could be defined mainly as private or public goods. They are public if and only if they are both non-rivalrous and non-excludable (VARIAN 1992: 414). Private goods are rivalrous and excludable. But to complete the analysis of goods typology by rivalry and excludability, some goods are rivalrous and non-excludable called "common pool resources" (V. OSTROM & E. OSTROM 1977, E. OSTROM ET AL. 1994; E. OSTROM 2003) and goods that are non-rival and excludable called "club goods" (MANKIW 2012: 219; Buchanan 1965). AI programs that use and manipulate human knowledge could be included in common pool sources.

This is the final point to discuss. If AI models were classified as corporation copyrights or a private good, this classification could result in an unfair market. The minority can dominate the majority in the case of AI models and outcomes if they are not properly included in an IP system because a minority of corporations with great computing power and AI models could dominate the IP rights system. That is because the private protection of intellectual rights from AI models will benefit only those who develop AI models and have computing power.

The AI outcomes use human knowledge databases registered on internet and the network all over the world to define which information whort to make a decision.

So AI raises a central question for all nations and cultures: how do we want to use such a powerful feature generated from private and public organizations and use public and private information? In other words, AI programs impact social behavior transversally and use all past and present human intellectual production.

So, we argue that the best classification for AI outcomes or AI generation from human knowledge from the internet is a collective good or common pool resource, even if the technology used for AI performance and outcomes is private property. In other words, IP property rights must include AI as the owner of rights not for private protection but for collective protection or a non-excludable good. The program is a tool and must be registered, but the information manipulated is the human knowledge that is a common good. The outcome is similar to manipulating natural services. We can sell water, but the cost of water is not for the natural good that it is free but for the bottle's package, cost, and delivery service.

AI models will impact society and not only the economy and will not only rely on the protection of rights. The reduction of human work, thus not well distributed for all human activities, implies a possible general reduction of work time in a week and the exigence to travel to house to work. What is the use of this time? Entertainment, sport, travel, education? Will it be needed to follow the innovation speed and new skills required to have good work? Should Education and Research be a priority for social and public workers?

AI outcomes belong to human global intellectual production and innovations in information technology and, oppositely, influence human knowledge in a way that makes it impossible to explore a cause-effect impact and suggest how even when protects the outcome of an AI process.

The definition of AI collective rights does not imply a collective mark or a collective certification but is a new dentition as a common property or a common pool resource. Our conclusion, of a common pool resource compares the natural use of resources. We use natural services such as water and air. Ai uses human knowledge and common information. It's time to reconsider an individual economic priority and develop more community economic priority and protection anchored to culture and its land. The use of a collective right and the possibility of creating a fund with those rights could help people to be educated and, if the outcomes end into an innovation that could have commercial value, the royalties could be used to reduce poverty or increase integration.

3. **CONCLUDING REMARKS**

The paper clarifies the relationship between AI rights and IP rights. The results of the work show there are conflicts and gray areas between AI rights and IP rights systems, the lack of transparency, and the basic definition that AI is a tool, not an innovation or a personality as an owner of property rights.

As a result, looking at the WIPO conversation sessions, the AI Regulation Act recently approved by the European Union, and consideration of the innovation classification (Oslo Manual) and economic rights classifications, we suggest considering AI-based innovations as autonomous innovations and, for IP protection system, as a collective right. It does not mean the rights will be free for all, and the producers of AI programs have not to be rewarded. We can consider a solution where the innovation and patent could share property to benefit all. It will lower the conflict of sharing rights, profits, and royalties, and protect rights that could be helpful.

Still, the AI registration of rights is part of the future innovation registrations of copyrights and patents. A new IP rights system must define AI as a developing tool and a part of the creative innovation process. The two-way relation of outcomes impacts and human knowledge increase is a collective construction. AI impacts are not only economics and confined to rights because AI use is wide and impacts social and human behavior.

The increasing use of AI and the protection or rejection of AI innovation rights sounds like the possible increase of a technological gap and struggle between high technology corporations and their origin (USA and China) that want to protect AI-generated models from concurrency. It will be possible to consider that such a common pool of rights could benefit and grant funds for global education if we grant AI ownership as a collective right.

AI models and programs are spread all over the internet. People's use of this new technology is increasing due to the fast and easy outcomes. To persist in having a not fair system of rights or an uncertain system will reduce the autonomous creativity of a single human and motivations of new AI-aided developing innovation except for government and great corporations that can afford the cost of development and eventually long legal negotiations as owner.

A way to share rights with everyone and benefit people with collective rights royalties could be to use global human knowledge, reduce the risk of unfair appropriations of common knowledge, and free use of AI outcomes. The danger is the claim and a fake national property speech of AI outcomes, but the reality is round, as everybody knows. The real nationality of scientists and scholars in the world.

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