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ABOUT US

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CRITICAL ANALYSIS OF IPR IN DIGITAL AGE- SPECIAL REFERENCE TO PATENT

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ABSTRACT

In the light of the quickly changing digital age, this research paper undertakes a thorough analysis of the Intellectual Property Rights (IPR) framework, with an emphasis on patent law. The article critically assesses whether current IPR policies are adequate and flexible enough to handle the particular problems presented by the digital landscape, as technological breakthroughs continue to transform industries and redefine the frontiers of innovation. The study uses a multifaceted methodology to evaluate how well patent laws support innovation, encourage competition, and protect inventors' rights in the digital age. It does this by integrating legal analysis, case studies, and empirical data. The study examines the complex interactions that emerge between the current patent system and cutting-edge technologies like biotechnology, blockchain, and artificial intelligence both chances and challenges. Furthermore, the study explores the international landscape of intellectual property rights (IPR), looking at differences in patent laws between countries and how those differences affect trade, technological transfer, and international cooperation. The harmonisation attempts and the difficulties caused by the disparities in legal norms receive particular focus.

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The study also examines how the digital era has affected conventional ideas of intellectual property, raising concerns about whether the current legal framework fairly balances the interests of innovators and the general public. It looks into topics like collaborative innovation methods, open-source movements, and how patents affect knowledge availability. Finally, this study attempts to present insightful analysis of the advantages and disadvantages of the current IPR system, along with suggestions for prospective changes that could make patent rules more compatible with the needs of the digital era. This study adds to the continuing discussion about how intellectual property rights might best act as catalysts for innovation in a world that is becoming more and more digitalized by critically examining the current legal framework.

INTRODUCTION

BACKGROUND

Intellectual property rights (IPRs) are a group of legal safeguards that are bestowed upon people or organisations in relation to their ideas or creations. These rights allow the proprietors the sole authority to utilise, transfer, and profit from these intellectual assets. Striking a careful balance between encouraging innovation and making sure the results of intellectual labour contribute to the public domain is the core goal of intellectual property rights (IPR) regulations. Although the idea of intellectual property has been around for centuries, the current legal system has developed to meet the demands of globalisation, technological innovation, and shifting economic conditions. The Statute of Monopolies, which was passed in England in 1624 and represents an early attempt to control and restrict the grant of monopolies, is where the idea of IPR originated. As time goes on, the range and character of intellectual The scope of property protection has grown to encompass trade secrets, patents, trademarks, and copyrights. Global agreements and organisations were established to harmonise and enforce intellectual property rights (IPR) regulations across countries as a result of the 20th century's technological advancements and commerce internationalisation. One of the main components of intellectual property rights (IPR) is the patent system, which gives creators temporary exclusivity over their creations. This encourages the publication of innovative concepts and gives inventors a way to recover their costs. Throughout the 19th and 20th centuries, the patent system saw substantial changes that resulted in the creation of patent offices and the harmonisation of patent laws across numerous nations. A significant step towards the globalisation of intellectual property rights is the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), which is housed within the World Trade Organisation (WTO) IP rules. TRIPS, which came into effect in 1995,

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established basic requirements for the protection of intellectual property, including the establishment and enforcement of strong legal frameworks for trade secrets, patents, trademarks, and copyrights by member nations. IPR laws face significant difficulties in the digital age. The effectiveness of conventional legal systems has come under scrutiny due to the ease with which information may be shared, the rapidity of technological advancement, and the global reach of the internet. IPR laws need to be continuously reevaluated and adjusted in light of issues like software patents, digital piracy, and the interaction of intellectual property with developing technologies like biotechnology and artificial intelligence. As technology develops and transforms sectors, the conversation over intellectual property rights must go on. Finding the ideal balance between promoting wider societal benefits and incentivizing innovation is a complicated process, and the development of IPR laws is a reflection of the continuous work to handle these complexity in a world that is changing and becoming more connected.

STATEMENT OF THE PROBLEM

As technology becomes integral to everyday life, the question of how patents impact access to knowledge and serve the broader public interest becomes crucial. Striking a balance between rewarding inventors and ensuring the dissemination of knowledge for societal benefit requires a careful examination of the existing legal framework.

HISTORICAL PERSPECTIVE

The historical viewpoint offers a context for comprehending the development of patent law. With a focus on patents in particular, the continuous critical analysis of intellectual property rights laws in the digital age aims to assess how the legal system has evolved over time and how effectively it meets the demands of the complex modern technological environment. Technological, societal, and economic developments have moulded the past iterative and dynamic evolution of intellectual property rights (IPR) legislation, especially in the context of patents. The origins of patent systems may be discovered in the times of ancient civilizations, when innovators were given exclusive rights by their governments to promote advancement. On the other hand, official legal frameworks for the protection of intellectual property started to appear in the early modern era. Origins of Patent Systems (17th Century): The English Statute of Monopolies, passed in 1624, is sometimes cited as a turning point in the development of patents. This law represented the first organised effort to control and restrict the misuse of royal grants of monopolistic powers. The act set the stage for the creation of a more organised patent

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system by exempting some inventions from the monopoly restriction.

The 19th-century Industrial Revolution and Patent Offices: Technology advanced rapidly in the 18th and 19th centuries with the start of the Industrial Revolution. Developing nations have up official patent offices in recognition of the need to safeguard innovators and promote disclosure. The United States Patent and Trademark Office (USPTO) was established as the first entity with the capacity to grant patents when the country passed the Patent Act of 1790. Paris Convention and Internationalisation (19th–20th Century): The Paris Convention for the Protection of Industrial Property was established in in 1883 as a result of the expansion of global trade and the need for standardised protection. This was a significant development towards harmonising patent laws establishing the framework for global collaboration in intellectual property issues amongst member nations.

20th-century TRIPS Agreement: The World Trade Organisation (WTO) enforced the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) in 1995, further internationalising and standardising intellectual property protection. TRIPS requires member nations to establish strong legal frameworks and sets minimum requirements for patent protection. Emerging Technologies in the Digital Age (late 20th century onward): The conventional patent systems faced tremendous challenges with the emergence of the digital age. The sufficiency of current legal frameworks has been reevaluated in light of the proliferation of software patents, worries about patent trolls, and the quick speed of invention in industries like biotechnology, artificial intelligence, and information technology. Collaborative Innovation and Open Source (21st century): The 21st century saw a challenge to old proprietary methodologies with the rise of open-source movements and collaborative innovation models. This change forced a reevaluation of patents' role in an environment where joint development and information exchange are becoming more and more common.

LEGAL CHALLENGES

Topic Content Eligibility:

Challenge: With the emergence of software and business method patents, determining what is eligible for patent protection has grown more difficult. Determining what constitutes patentable subject matter is a challenge for courts and patent offices, especially in areas where technology and business innovation coexist.

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Norm for Non-Obviousness:

Challenge: It can be arbitrary and prone to disagreements for an invention to have to be non-obvious to someone with ordinary experience in the relevant field. Judges and patent examiners have a difficult time determining the degree of innovation necessary for patentability, especially in quickly developing industries where small steps forward may be hard to see.

Patent Abuse: Problem: Patent trolling is the act of claiming patents mainly in order to demand settlements or licencing fees; instead of compared to creating or applying the patented technology. This puts the integrity of the patent system at jeopardy and could stifle innovation by putting lawful inventors and businesses at the expense of litigation.

Globalisation and Standards Divergence: Difficulty: As trade becomes more international, different country patent laws present difficulties for international businesses. Companies that operate in several jurisdictions may face legal complexity and strategic challenges due to the lack of uniformity in patent laws and enforcement methods.

Novel Technologies: New and disruptive technologies like blockchain, biotechnology, and artificial intelligence present special difficulties for patents. There are many legal challenges in determining patentability, determining disclosure requirements, and making sure that patent rules keep up with the fast evolving nature of these technologies.

Previous Work and Excessive Information: Challenge: The enormous quantity Finding pertinent previous art is a difficult task for patent examiners due to the abundance of prior art and information available online. This may lead to the granting of unduly wide patents, which may cause future difficulties and disputes.

Patent Quality and Excessive Generalisations: Difficulty: There are concerns about the issued patents' quality. Claims that are too general or ambiguous may lead to litigation since rivals may contest the patents' validity. Patent law is constantly faced with the difficulty of ensuring that patents are accurate, unambiguous, and really inventive.

Unethical Behaviour: Challenge: A patent may become unenforceable if it is claimed that unfair behaviour occurred during the patent application procedure, such as failing to provide the patent

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office with material information. figuring out how much disclosure is required and Penalties for non-compliance are difficult to enforce in the long run.

Delays and Backlogs at the Patent Office: Problem: Backlogs at patent offices across the globe frequently cause delays in the review and issuance of patents. This can impede innovation, especially in sectors that move quickly and where prompt protection is essential.

Regulatory Concerns: When applied improperly, patents can be exploited as instruments for anticompetitive activity. It can be difficult to strike a balance between the exclusive rights that patents confer and the requirement to maintain market competitiveness when antitrust laws and patent law collide.

It is crucial to resolve these legal issues if the patent system is to remain intact and continue to effectively foster innovation while preserving fair competition.

HYPOTHESIS

The existing patent framework may find it difficult to keep up with the rapid breakthroughs in disciplines like biotechnology, blockchain, and artificial intelligence that characterise the digital age. According to the theory, existing systems for evaluating and safeguarding innovations might not be able to keep up with the rapidly changing landscape of developing technology.

- The traditional ideas of exclusive rights ingrained in patent regimes are being challenged by the growth of open-source movements and collaborative innovation approaches. It is proposed that a reassessment of the function and efficacy of patents in encouraging and defending innovation may be necessary due to the conflict between the need for open collaboration and the defence of intellectual property.

REVIEW OF LITERATURE

Impact of Technological Developments on Patent Law: The literature has placed a lot of emphasis on the quick speed at which technology is developing. The difficulties of adapting established patent frameworks to new technologies are covered by academics like Bessen and Meurer (2008) and Cohen et al. (2000). They draw attention to problems with patent quality, non-obviousness, and the difficulty of defining patentable subject matter in industries like

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software and biotechnology.

Harmonisation of Patents and Globalisation: The influence of globalisation on patent law and the difficulties in standardising patent requirements between legal systems are recurrent concerns. The effects of international trade agreements, such the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), on the harmonisation of patents worldwide are examined by Maskus (2000) and Ginarte and Park (1997). The conflict between the steadfastness and the requirement for harmonisation peculiarities unique to a given jurisdiction is an important field of study.

Open Source Initiatives and Teamwork in Innovation: The growth of collaborative innovation models and open-source movements is covered in the literature. Benkler (2002) and Von Hippel (2005) examine the ways in which these developments subvert conventional patent notions of exclusivity. Scholarly discussion continues on the mechanics of open collaboration, the function of patents in such settings, and the effect on technological advancement.

Knowledge Accessibility and Public Interest: Reichman and Franklin (2002) and Boldrin and Levine (2008) address issues of public interest and access to knowledge. The literature investigates the trade-off between the societal advantages of universal access to inventions and the exclusive rights bestowed by patents. This covers talks about patent pools, mandatory licencing, and techniques to guarantee more widespread knowledge transmission.

New Business Models and Monetization of Patents: Scholars like Shapiro (2001) and Merges and Nelson (1990) have examined how business strategies are changing in the digital age and how this is affecting patent law. There is interest in and concern over the transition from conventional private methods to novel monetization techniques including defensive patenting and patent assertion entities.

Expecting Legal Changes: Academics such as Cohen and Gurun (2012) and Rai and Eisenberg (2003) have written about the necessity of legal reforms to meet the problems presented by the digital age. A consensus that the current legal system may need to be modified is reflected in the proposals for reforms, which vary from modifications to patent inspection procedures to adjustments to the length and breadth of patent protection adaptation.

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Research methodology

This study follows a doctrinal research approach, commonly referred to as traditional research, which encompasses analytical and descriptive methods. Doctrinal research relies on existing information, analyzing available facts to advance the study's evolution. The research primarily employs secondary data sources, including books, articles, journals, and similar publications, to conduct the analysis.

CRITICAL ANALYSIS

The complex landscape that arises from the junction of Intellectual Property Rights (IPR) and the digital age calls for a critical examination of the current frameworks, with a focus on patent law in particular. This analysis identifies a number of opportunities and problems that need to be carefully considered in order to guarantee that intellectual property protection is both effective and flexible in the quickly changing digital world.

Rate of Technological Advancement: The speed at which technology is developing in the digital age has beyond the capacity of the conventional patent system to keep up. The swift advancement of technologies like biotechnology, blockchain, and artificial intelligence presents difficulties for examiners and patent offices when determining whether an invention is original and not obvious. Because of this changing environment, patents with unduly wide claims may be issued, which could potentially rivalry and subsequent innovation.

Globalisation and Standards Divergence: International cooperation and competitiveness have increased as a result of globalisation, although regional differences in patent laws still exist. Businesses that operate globally may face difficulties due to legal complexity arising from a lack of standardisation in norms. A sophisticated approach to global patent governance is necessary to resolve the conflict between the requirement for uniform protection and the preservation of jurisdiction-specific subtleties.

Open Source Initiatives and Teamwork in Innovation: The conventional paradigm of patents as exclusive rights is being challenged by the growth of open-source movements and collaborative innovation. These initiatives raise concerns about the efficacy of patents as an innovation incentive, even as they encourage knowledge exchange and cooperative growth. A reevaluation of the position is required due to the conflict between open collaboration and the preservation of

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intellectual property of patents in promoting creativity in the era of digitalization.

Knowledge Accessibility and Public Interest: An important factor to take into account is striking a balance between giving inventors exclusive rights and guaranteeing that the general public has access to knowledge. The present patent system can unintentionally make it more difficult to obtain necessary technologies and to find answers to urgent global problems. To address this balance, reforms that keep incentives for innovation high while giving the public interest first priority are essential.

New Business Models and Monetization of Patents: New economic models have emerged in the digital age, such as defensive patenting and the growth of patent assertion corporations. These methods facilitate revenue streams, but they also raise issues related to patent trolling and impede innovation by introducing ambiguities in the law and potential for legal action.In this regard, a critical assessment of the patent system's effectiveness in balancing inventors' interests with those of the larger market is necessary.

Expectations Regarding Legal Reforms: Legal reforms are advocated by scholars and policymakers as a means of addressing the issues that the digital age presents. Reassessing the standards for patentability, cutting the length of patents for quickly developing technologies, and putting in place measures to stop patent trolling are some of the recommendations. To make sure that any modifications to the legal framework are in line with the objectives of encouraging innovation and advancing the public interest, a critical evaluation of these suggested reforms is necessary.

Finally, a critical examination of intellectual property rights (IPR) in the digital era, with a particular emphasis on patent law, highlights the necessity of a flexible and nuanced strategy. Keeping the exclusive rights in check To guarantee that intellectual property protection continues to be a driving force behind innovation in the digital age, careful modifications may be required to balance the needs of inventors with the quickly evolving technical landscape.

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IMPLICATION FOR FINDING ON INDIA'S LEGAL SYSTEM OF IPR IN DIGITAL AGE

It might be necessary to modify the legal structure in order to meet the challenges brought about by quickening technical breakthroughs and shifting global dynamics.

Technology-Informed Patent Examination Is Necessary:

India's patent examination procedures desperately need to be updated to reflect the new and sophisticated technology of the digital age. This suggests that the legal system and patent examiners ought to possess the knowledge necessary to evaluate the originality and non-obviousness of discoveries in cutting-edge industries like blockchain, biotechnology, and artificial intelligence. Maintaining a thorough examination process could need ongoing training and working with technology experts.

Standardisation of International Cooperation: In the digital age, international cooperation is essential, and India's legal system ought to work towards more uniformity in patent requirements. This suggests that To promote easier international cooperation, technology transfer, and adherence to international trade agreements, efforts should be undertaken to bring Indian patent rules into line with international norms. On the international scene, this harmonisation may facilitate a more fluid flow of inventions and knowledge.

Open Collaboration and Patent Protection in Balance: A careful balance between encouraging open cooperation and offering sufficient patent protection is required in light of th the growth of open-source movements and collaborative innovation methods. The legal system in India will need to reconsider how patents encourage innovation while also appreciating the advantages of information exchange. Investigating strategies that promote teamwork without jeopardising inventors' rights may be one way to do this.

Ensuring Public Interest and Knowledge Accessibility: India's legal system ought to take into account the results that emphasise the the significance of striking a balance between guaranteeing the public's access to knowledge and the exclusive rights bestowed by patents. This suggests that in order to secure greater availability and affordability, legal reforms that put the public interest first must be implemented. Possible mechanisms to consider include compulsory licencing or special provisions for technologies that are deemed vital.

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Overcoming Patent Monetization Obstacles: India's legal system ought to foresee possible problems with defensive patenting and patent trolling in light of the rise of new business models and difficulties in the monetization of patents. This suggests that actions that deter abusive practises are required. These actions could include improving the quality of patents granted, encouraging patent ownership transparency, and opposing strategies that stifle competition and innovation.

Expecting and Adjusting to Legislative Changes:The critical study recommends that legislative changes could be required to handle the particular difficulties brought up by the digital era. The legal system in India should be ready to adjust its structure in light of these prospective adjustments. This flexibility may entail proactive approaches to solve new problems in intellectual property protection, stakeholder participation, and regular assessments of current legislation. Essentially, the implications of intellectual property rights (IPR) in the digital age for India's legal system highlight the need to adapt to technological changes, promote international cooperation, and strike a careful balance between upholding intellectual property rights and furthering societal interests. A flexible and progressive legal framework is essential to capitalise on innovation and tackle the issues brought about by the quickly changing digital environment.

CONCLUSION

A complex environment full of possibilities and obstacles that call for careful analysis and adjustment. Some important ideas become apparent when we traverse the dynamic junction of innovation, technology, and legal frameworks:

Technological Change Requires Adjustment: Unprecedented technological developments brought forth by the digital age are changing businesses and testing the limits of intellectual property protection. The analysis emphasises how important it is for legal frameworks—especially those pertaining to patents—to keep up with the quick speed at which technology is developing. To promote innovation and preserve the integrity of the intellectual property regime, it is critical to make sure that patent assessment procedures and legal standards are informed by technological advancements.

Harmonised Standards Are Necessary for Global Collaboration: Global market interdependence necessitates a unified approach to patent standards. Results highlight the necessity of conformity

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with international standards to enable smooth international cooperation. In addition to promoting information sharing, harmonisation can help ensure that patent rules are applied consistently and openly in all relevant jurisdictions.

Striking a Balance between Patent Protection and Open Collaboration-Conventional p atent ideas are under threat from the emergence of collaborative innovation approaches and open-source initiatives. It is difficult to strike a balance between promoting free and open collaboration and preserving the benefits of patent protection. The report urges a reassessment of how patents promote innovation, taking into account the advantages of knowledge sharing while guaranteeing the protection of inventors' rights.

Public Interest and Knowledge Accessibility: The critical analysis emphasises how crucial it is to give the public interest in intellectual property protection top priority. India's legal system, like all others, should actively look for systems that strike a balance between limited access and exclusive rights. This entails foreseeing and resolving concerns about accessibility, necessary technologies, and the effects of patent awards on society.

Innovative Business Strategies for Preventing Abuse: Concerns over possible misuse are raised by the introduction of new business models, such as defensive patenting and patent monetization. Legal systems need to take the initiative to prevent actions like patent trolling that stifle innovation. The report recommends actions to guarantee the calibre of patents, advance patent ownership transparency, and deter actions that go against the spirit of encouraging innovation.

Expectations Regarding Legal Reforms: The critical study highlights the necessity of a forward-looking legal framework in order to tackle the aforementioned difficulties. Recognising the need for legislative changes and being ready to is One important lesson is how the digital age is changing. Changes to patent examination procedures, the length of patent protection, and the implementation of mechanisms that bring patent laws into line with modern technological and societal requirements are some examples of reforms.

Finally, the critical examination of intellectual property rights in the digital era issues a global call to action for legal systems to advance in step with technical advancement. The results highlight the need for a strategy to intellectual property protection that is fair, flexible, and

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international in order to ensure that innovation keeps thriving and benefits both inventors and society as a whole.

Roche v. Cipla (2008):

Nature: Delhi High Court case

Significance: The case centered on patent infringement allegations related to Erlotinib, a cancer drug. The court held that Cipla's generic version did not infringe Roche's patent, highlighting the importance of carefully assessing patent claims and the scope of protection.

Bajaj Auto Ltd. v. TVS Motor Company Ltd. (2009):

Nature: Supreme Court of India case

Significance: While not directly related to patents, this case dealt with design infringement in the context of two-wheeler designs. The Supreme Court's decision provided insights into the protection of design elements under intellectual property laws in India.

Wockhardt Ltd. v. Torrent Pharmaceuticals Ltd. (2009):

Nature: Bombay High Court case

Significance: The case involved patent infringement allegations related to a drug used for the treatment of psychiatric disorders. The court addressed issues of patent validity and infringement, providing insights into the assessment of patent claims and the determination of infringement.

AREAS FOR FUTURE STUDIES-

Innovations in Algorithms and Their Patentability:

Examine the requirements and obstacles related to patentability for algorithmic advances in data analytics, machine learning, and artificial intelligence. Examine how patent rules can be modified to account for the special qualities of algorithms and their influence on the development of the digital world.

Blockchain Technology and Copyright:

Analyse the relationship between intellectual property and blockchain technology. Examine the ways in which blockchain technology can improve the licencing, registration, and enforcement of patents. Examine how blockchain technology might be used to solve problems with previous

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art, patent ownership, and cooperative innovation.

Global Harmonisation of Patents:

Examine methods to improve the harmonisation of patent laws worldwide. Analyse the difficulties multinational corporations encounter while conducting business in several jurisdictions and suggest solutions to simplify the patent application process, lessen legal ambiguity, and promote more seamless cross-border cooperation.

Moral Determinationsin Emerging Technology Patents:

Examine the moral ramifications of patenting cutting-edge technologies like genetic engineering, biotechnology, and artificial intelligence. Examine how ethical considerations, responsible innovation, and striking a balance between proprietary rights and social objectives can be incorporated into patent laws.

Patenting Strategies and Open Source Models:

Examine how open-source methods and collaborative innovation are changing in the market. Examine how businesses handle patenting tactics in open-source settings and look into the legal frameworks that support innovation and knowledge exchange in the digital era.

Patents and Digital Twin Technologies:

Examine the state of patents for digital twin technologies, which create virtual equivalents of real-world systems or items. Examine the difficulties and possibilities associated with patenting discoveries pertaining to digital twins and their uses in several sectors, including manufacturing, healthcare, and urban planning.

Metrics for Quality Patents in the digital age: Provide measures and procedures to evaluate the calibre of patents awarded in the digital era. Examine how well patent examination procedures assess the originality, nonobviousness, and usefulness of inventions, especially in quickly developing technological domains.

Open innovation platforms' legal implications: Analyse the open innovation ecosystems and platforms' legal ramifications. Examine the ways that patent laws can assist with collaborative innovation projects, safeguard the rights of participants, and make it easier for intellectual

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property to be shared in open innovation frameworks.

Data Security and Patent Applications: Examine the relationship between patent applications and data privacy rules, particularly in sectors of the economy that mostly depend on data-driven technologies. Examine the difficulties and remedies associated with safeguarding inventions including private or confidential information.

Enforcing Patent Rights in Virtual Environments: Examine the difficulties related to Enforcing patents in virtual and augmented reality settings. Examine the ways in which patent rules can be modified to deal with infringements, issues with prior art, and the particular characteristics of advances in immersive technology.

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