



GLOBAL DECENTRALIZED PATENT FILING PROGRESSIVE WEB APPLICATION USING BLOCKCHAIN

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Abstract : In the field of intellectual property rights and patent registration, there has been a longstanding need for a more efficient and transparent system to streamline the process. The traditional patent registration process is often associated with confusing documentation, long approval times, and a lack of transparency, leading to frustration and issues with patent validity. Blockchain technology has emerged as a promising solution to these challenges by providing a secure and transparent way to record and verify transactions. By leveraging blockchain, the patent registration process can be more efficient, secure and accessible to innovators and inventors around the world. A key challenge is integrating blockchain technology into the existing patent writing process and law. Additionally, ensuring the originality and novelty of the patent application is still an important issue that needs to be resolved. This patent filing application harnesses the power of blockchain technology to streamline the patent registration process, providing a secure and transparent method for users to submit their necessary documents for patent registration. Although there are efforts to digitize and modernize the patent registration process, most current solutions still rely on centralized book repositories and authentication processes, which can lead to errors and oversights. In contrast, a blockchain-based patent registry system provides a decentralized and tamper-proof ledger that can ensure transparency and immutability of patent information. In the event of non-registration or rejection, the patent application is allocated to a dedicated blockchain block and seamlessly integrated into the main chain, ensuring the traceability and immutability of all records. By combining blockchain technology and AI-powered verification tools with partial human oversight, a more efficient, reliable and reliable patent registry can be created, ultimately supporting innovation and preserving heritage in the digital age.

Keywords - Patent Filing, Blockchain, Integration, Authenticity, Originality, Streamline, Transparent, Immutability, Traceability, Novelty, Infringement, Trustworthy.

I.INTRODUCTION

Blockchain is a shared, immutable ledger that simplifies the process of recording transactions and tracking assets across a business network. Assets can be tangible (homes, cars, cash, land) or intangible (intellectual property, patents, copyrights, brands). Almost anything of value can be tracked and exchanged on the blockchain network, reducing risk and cost for all participants.

1.1 Key elements of a blockchain

A) Distributed ledger technology - All network participants have access to the distributed ledger and its immutable record of transactions. With this shared ledger, transactions are recorded only once, eliminating the duplication of effort that's typical of traditional business networks.

B) Immutable records - No participant can change or tamper with a transaction after it's been recorded to the shared ledger. If a transaction record includes an error, a new transaction must be added to reverse the error, and both transactions are then visible.

C) Smart contracts - To speed transactions, a set of rules — called a smart contract — is stored on the blockchain and executed automatically. A smart contract can define conditions for corporate bond transfers, include terms for travel insurance to be paid and much more.

1.2 Working of Blockchain

The work of the blockchain is based on each transaction that takes place, recorded as a "block" record. These changes indicate the movement of assets (inventory) or non-assets (intelligence). The data block can record information you choose: who, what, when, where, how much, and even status such as the temperature of the food being transported. Each block connects to the blocks before and after it. These blocks form a chain of data when assets are moved from one location to another or ownership changes hands. These blocks confirm the time and order of transactions, and the blocks are secured together to prevent a block from being modified or a block being inserted between two blocks that are already there. Transactions are locked together in an immutable chain: Blockchain. Each additional block strengthens the verification of the previous block and the entire blockchain. This provides the main benefit of the exchange by making interaction with the blockchain obvious. This eliminates the possibility of interference from malicious actors and creates a business listing that you and other partners can trust. Applications include financial transactions, insurance, personal information security and medical information sharing.

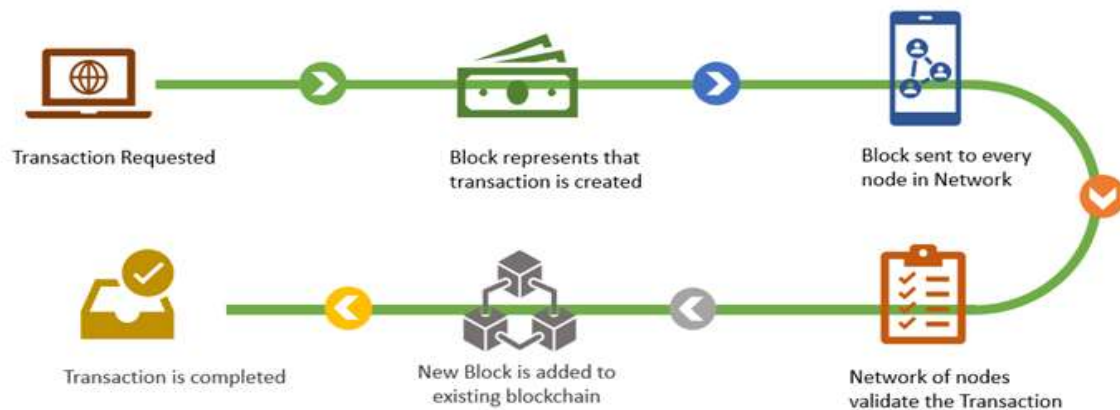


Fig 1.1 Basic working of blockchain

1.3 The process

IP rights are proven by patents or demonstrations of intimate subject knowledge only the creator would have. Legally, a patent, a type of document and a form of intellectual property right, allows its owner to exclude others from commercially profiting from the protected invention in the region protected by the patent for a given period (usually 20 years). The rights covered by IP laws help owners benefit from their "intellectual property" giving them income over the use of their patented products, as well as some control over how their property is used.

1.4 The use of blockchain in the IP enforcement sector

A blockchain such as Bitcoin functions as a database that keeps unaltered records of data in "distributed digital ledgers." This means that the data lodged in the blocks cannot be changed or eliminated, and that the databases are duplicated n-times to be distributed among the n-nodes in the given network.

Given the transactions are verified and validated by as many computers as they volunteer to be in the network at any given time, this crowdsourcing oversight contributes to the integrity of the ledger and replaces the need for any central authority. In other words, in this type of "public" blockchain, and considering the PoW threshold, no cyberattack could strike all copies of the ledger simultaneously to replace the true ledger.

A consequence of having the information distributed is that there is not "single point of failure," meaning that a hacker could not bring down the network by attacking a single point. The lack of a "central storage" is a key valuable differentiator from legacy systems and the reason why distributed ledger technology (DLT) offers many advantages for IP registration, protection, and as evidence at a registry or in a court-of-law.

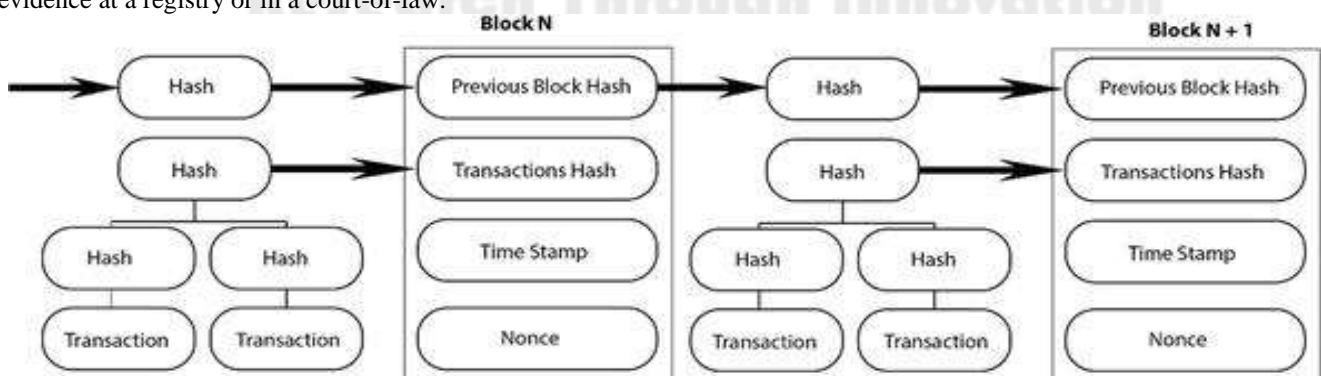


Fig 1.2 Time stamp and blockchain structure

This figure shows the process transactions follow in the Bitcoin protocol. Here, we can see how the hash of each event (the transaction) is included in each block. The block of these hashes also includes a stamp, attesting to the timing when an event happened. Given the transaction can represent any event, say when a brand was first publicly used, this time stamp is instrumental in effectively protecting intellectual property rights.

1.5 Evidence of creatorship/proof-of-ownership

The growth of the digitalization industry and 4.0 technologies demands a system for providing proof of ownership of intellectual assets. And Blockchain could be just the right technology for registering and verifying the ownership of IP works. The below figure summarizes three aspects of proof of ownership IP.

With respect to patents, if the creator and owner of an invention wishes to secure her rights, she can go to a patent office and register her IP. Nonetheless, if it is a copyright, the creator would have to generate its own evidence as the weight of proof of ownership in this scenario falls on her. In this internet era, anyone can download already created content and use it; thus, exercising the copyright has become very challenging. This observation finds a clear example in the current legal dispute between Craig S. Wright, alias Satoshi Nakamoto the inventor of Bitcoin, and the Crypto Open Patent Alliance (COPA), a US-based group of software developers which took his original Bitcoin protocol and modified it while keeping the brand name. We cover some aspects of this dispute in the next section.

The Bitcoin protocol can be used to assess IP ownership. This figure covers three aspects of proof of ownership. Clockwise, the first on the right refers to the antecedents of the asset. Given the blockchain provides an indelible record, it can be used to list “original” products so they can be differentiated from counterfeit ones. The second refers to using the blockchain to certificate IP ownership. For example, by hashing an event such as the patent. The last refers to using blockchain technology to dispute a later claim.

This can be done by showing the time stamp of an earlier claim. Using the blockchain in the proof of owners is already happening as some companies have begun to develop a system that provides blockchain-based time-stamping and validation for the safeguarding of digital assets.

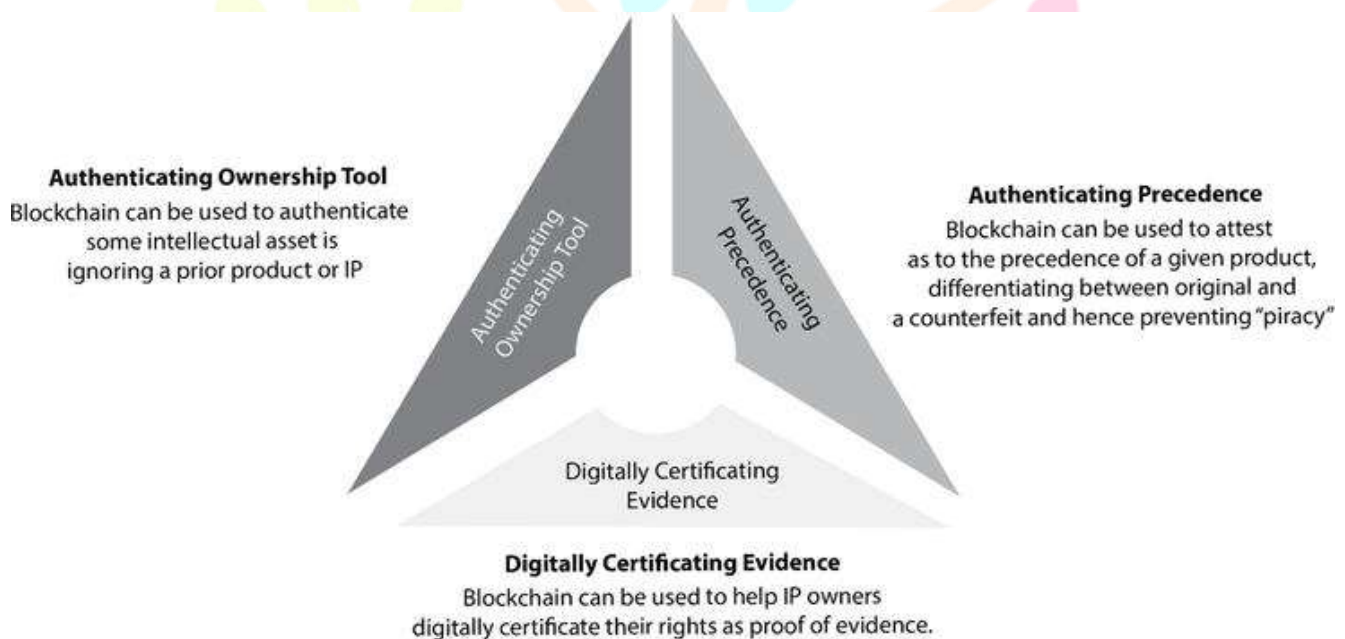


Fig 1.3 Three Aspects of Proof of Ownership IP

1.6 Provenance, anti-counterfeiting, and enforcement of IP rights

Ledger technology could also help assess provenance authentication by using the blockchain records containing authorized licensee and ownership data, given these record “objectively verifiable details” about the products. Hence, everyone in the supply chain, including consumers and customs, could substantiate a genuine product and differentiate it from a fake one.

1.7 Smart Contracts and digital rights management

In the context of blockchain, a smart contract is a computer program that gets executed automatically whenever a set of predetermined conditions is met. Thus, in the process to secure IP rights, these contracts could facilitate the execution of different actions such as checking the assignment and validity of a patent, negotiating an agreement, executing and paying for a transaction, and informing all interested parties of such transaction. Hence, in IP rights management, smart contracts could be used to establish and enforce private IP agreements such as licenses, the automatic start of contracts including contents such as music and pictures, and to ease and speed the transfer of payments to IP owners.

II. LITERATURE REVIEW

2.1 A COMPREHENSIVE LITERATURE REVIEW ON THE BLOCKCHAIN AS A TECHNOLOGICAL ENABLER FOR INNOVATION

Author: Stefan K. Johansen

This literature review provides a comprehensive and detailed documentation of the current technological and literary state of the Blockchain technology within Information Systems research. The review outlines in detail what is required for the Blockchain technology to function as a technological enabler for innovation and the required factors for success. The literature review furthermore categories the current findings into distinct concept categories, Blockchain technology in its current state still has way to go before the technology will reach a state considered sufficient for mainstream adoption.

2.2 PETCHAIN: A BLOCKCHAIN-BASED PRIVACY ENHANCING TECHNOLOGY

Author: Ibrahim Tariq Javed, Fares Alharbi, Tiziana Margaria, Noel Crespi, Kashif Naseer Qureshi

With the increasing use of smart devices and sensors, enormous amounts of data are being generated continuously. The data is commonly stored in centralized cloud platforms and consumed by different services. The data is indeed a valuable resource for many service providers who provide advanced features and utilities to their subscribers. However, user data include personal and sensitive information which can be misused in many ways. There is no way for a subscriber to confirm that their service provider is compliant with data privacy regulations. The existing privacy enhancing techniques such as anonymization and differential privacy substantially reduce data usability while ensuring privacy. Therefore, it remains essential to provide a feasible solution that allows service providers to take advantage of user data while guaranteeing their privacy. In this paper, we present PETchain: a novel privacy enhancing technology using blockchain and smartcontract. In PETchain, data is stored securely in a distributed manner and processed in a user-selected trusted execution environment. Users deploy the smartcontract that allows them to decide whether and how their data can be exploited by service providers. The feasibility and performance of PETchain are presented by implementing PETchain over a consortium Ethereum blockchain.

2.3 USING BLOCKCHAIN TECHNOLOGY TO MANAGE CLINICAL TRIALS DATA: A PROOF-OF-CONCEPT STUDY

Author: David M Maslove , Jacob Klein , Kathryn Brohman , Patrick Martin

We described BlockTrial, a system that uses a Web-based interface to allow users to run trials-related Smart Contracts on an Ethereum network. Functions allow patients to grant researchers access to their data and allow researchers to queries for data that are stored off chain. As a type of distributed ledger, the system generates a durable submit and transparent log of these and other transactions. BlockTrial could be used to increase the trustworthiness of data collected during clinical research with benefits to researchers, regulators, and drug companies alike. In addition, the system could empower patients to become more active and fully informed partners in research.

2.4 PATENT PROTECTION FOR BLOCKCHAIN

Author: Shuijing Hu

The patents policy about block chain technology are widely focused by many country, In this paper, two aspect about block-chain patent application has been analyzed in order to enhance the possibility of authorization, one is patent application description which should be made the detailed improvements and the other is the claims which should record the related technical features, algorithms and methods. and the conclusion is that block chain patent applications especially involving encrypted digital currencies is examined strictly than common technology, especially involving digital currencies.

2.5 A PATENT REGISTRATION AND TRADING SYSTEM BASED ON BLOCKCHAIN

Author: Jian Hu, Peng Zhu, Yong Qi, Qingyun Zhu, Xiaotong Li

The traditional process of patent registration & trading is very complex, often hindered by challenges related to information security and patent traceability. As a popular emergent technology, blockchain has several useful characteristics such as tamper proof, distributed data management, timestamp, asymmetric encryption, and smart contract. Built upon these characteristics, this paper develops a patent registration and trading system for improved information security, immutability, transparency, and traceability. This system includes functions of patent registration and storage, patent trading, user privacy protection during patent registration and trading process, and overall data access control. To validate the applicability of the proposed system, this paper builds a blockchain environment to simulate a patent registration and trading process. We further conduct a security analysis and an efficiency analysis to compare the proposed patent registration and trading process with the traditional process. Through these comparisons we show that the proposed blockchain-aided patent registration and trading system is effective in resolving several key patent protection challenges. Theoretical and managerial implications are also discussed to highlight the significance of our proposed method.

2.6 A BLOCKCHAIN-BASED MODEL TO IMPROVE PATENT AUTHENTICATION AND MANAGEMENT PROCESS

Author: Prageeth Thilina Gunasekara; Chathura Rajapakse

Patent authentication and management is a vital activity for protecting individuals' and organizations' intellectual property rights around the world. As patents are territorial & data management for patent applications is primarily handled by local intellectual property offices, the patent authentication and management procedure are inefficient and time-consuming on a

worldwide scale. Furthermore, data management concerns in the patent process frequently result in conflicts and legal actions among competing parties. Blockchain technology is generally recognized for its potential application in the development of decentralized, secured, and transparent systems with immutable records. As a result, it appears to be a viable solution for overcoming issues in the patent domain. The purpose of this research is to demonstrate how blockchain technology may help with patent authentication and management. To explore the process of the existing system and its shortcomings, interviews with relevant stakeholders and a comprehensive literature review are conducted. To overcome the highlighted barriers and limitations, a novel architecture & prototype of a consortium blockchain system are proposed, with regulated bodies as nodes such as the World Intellectual Property Office and Regional IP Offices handling the consensus mechanism. The proposed consortium blockchain design is based on the Ethereum architecture is equipped with smart contracts. The present study demonstrates that blockchain can ensure the reliability of patent data and real-time updating of records efficiently and at a low cost. Furthermore, patents that have been registered to this network become reliable across IP offices. Without relying on a single patent office, patent applications can be approved or rejected with the proposed architecture. The prototype model shows considerable improvement in establishing evidence of first ownership which helps minimize a significant number of litigations.

2.7 HOW CAN BLOCKCHAIN TECHNOLOGY SUPPORT PATENT MANAGEMENT? A SYSTEMATIC LITERATURE REVIEW

Author: M. Denter, Fabian Seeger, Martin G. Moehrl

Patent management tasks involve many stakeholders from diverse disciplines and hierarchies as well as from inside and outside the organization. By drawing on the transaction cost and stakeholder theories, Blockchain technology offers new opportunities to rethink the way in which stakeholders are organized and collaborate. Although Blockchain technology receives considerable attention from both the public and academia, the question of how Blockchain technology leverages patent management in particular has so far been neglected, although it holds great promise. Consequently, this is what we choose to be our basic research question. In response to it, we conduct a systematic literature review, following a procedure in three steps. Out of an initial sample of 714 articles, we select 52 as being particularly relevant, and classify them in accordance with the dimensions of the 7D Patent Management Maturity Model. Three main foci regarding the use of Blockchain technology emerge – i.e. for the generation, the enforcement, and the exploitation of patents. This study contributes to scholarship and management by showing that Blockchain technology mitigates environmental and behavioral uncertainty, while stimulating new governance forms and business models by reorganizing or discarding stakeholders.

2.8 PATENTS AND THEIR SECURITY ISSUES USING BLOCK CHAIN TECHNOLOGY

Author: K. Mashood, H.U.R. Kayani, A.A.Malik , M. A. Raza and A. Tahir

Blockchain technology is a recent development in the Internet world that has impacted a variety of industries. In a distributed system, data and transactions can be shared securely using point-to-point connections. The purpose of this study is to conduct research on how a person or organization may develop a patent strategy to safeguard patent rights and how patent data is protected using blockchain technology. The suggested blockchain-based patent data protection solutions offer improved data security, data strategy and performance enhancements. This paper discusses some well-known patent technologies to emphasize the need of protecting an idea or an invention. As technology advances daily via the advancement of gadgets, it is more necessary to protect an original concept by filing a patent.

III. PROBLEM IDENTIFICATION

Existing patent verification systems have a number of problems, including:

Centralization and vulnerability to fraud: Existing patent verification systems are typically centralized, making them vulnerable to fraud and hacking.

- Difficulty and time-consuming: It can be difficult and time-consuming to verify the authenticity of a patent, especially for patents filed in multiple jurisdictions.
- Lack of a single global database: There is no single, global database of patents, making it difficult to verify patents across different countries.
- Cost: Patent verification can be expensive, especially for small businesses and entrepreneurs.
- User-friendliness: Existing patent verification systems are not always user-friendly, making them difficult to use for people who are not familiar with the patent process.

There are also some challenges that need to be addressed before blockchain-based patent verification systems can be widely adopted. These challenges include:

Lack of awareness and standardization: There is a lack of awareness about blockchain technology and its potential for patent verification. Additionally, there is no standard for the development and implementation of blockchain-based patent verification systems.

Complexity and integration challenges: Blockchain-based patent verification systems can be complex and difficult to integrate with existing patent systems.

Cost and scalability challenges: Developing and maintaining blockchain-based patent verification systems can be expensive. Additionally, these systems can be slow and inefficient, especially for a large number of users.

Legal and privacy concerns: There is a lack of legal precedent for the use of blockchain technology for patent verification. Additionally, there are concerns about the privacy and security of patent data stored on a blockchain.

IV. PROBLEM DEFINITION

“The Blockchain Based Patent Filing Application is a comprehensive software system designed to simplify and enhance the patent registration process. It leverages blockchain technology for secure recordkeeping, verification against patent filing protocols, and integration with advanced artificial intelligence (AI) systems to ensure the originality and authenticity of patent applications.”

4.1 Primary Objective

- 1) Streamline Patent Filing: Develop a user-friendly platform that allows inventors and innovators to easily submit their patent documents for registration.
- 2) Blockchain Integration: Implement blockchain technology to create an immutable and transparent ledger for patent applications.
- 3) Verification Mechanism: Create a robust verification process that checks submitted patent applications against various patent filing protocols to ensure they meet legal requirements.
- 4) Originality Assurance: Utilize AI algorithms and partial human oversight to verify the originality of patent applications, ensuring they do not exist within any patent system.

4.2 Project Workflow

- 1) User Registration: Users register on the platform, providing personal and patent related information.
- 2) Document Submission: Users submit their patent documents, which are stored in the blockchain network.
- 3) Verification Process: The verification engine checks the submitted documents against various patent filing protocols.
- 4) Originality Assessment: AI algorithms and partial human oversight verify the originality of the patent application.
- 5) Registration or Rejection: If the application passes all checks, it proceeds to patent registration. If not, it is allocated a dedicated blockchain block.

4.3 System Potential

- 1) Improve the efficiency and effectiveness of the patent system. The blockchain can automate many of the manual tasks involved in patent filing and registration, which can reduce the time and cost of the process.
- 2) Increase transparency and accountability. The blockchain is a public ledger that records all transactions, which can help to reduce corruption and fraud in the patent system.
- 3) Make patents more accessible to inventors. The blockchain can make it easier for inventors to file and register patents, regardless of their location or financial resources.
- 4) Promote innovation. By making it easier and more affordable to patent inventions, the blockchain can encourage inventors to create new products and services.

V. ANALYSIS AND DESIGN

The patent application workflow is designed to be efficient, transparent, secure and reliable. It uses the power of blockchain technology and AI to streamline the patent registration process and protect the intellectual property rights of innovators and inventors.

5.1 Key workflow features:

- 1) Blockchain integration: The workflow integrates blockchain technology to create a secure and transparent record of all patent applications and granted patents.
 - 2) AI-Driven Verification: The workflow uses artificial intelligence systems to perform rigorous checks and evaluations of patent applications for originality and compliance with legal requirements.
 - 3) Human Oversight: The workflow includes human oversight to ensure AI-driven decisions are fair and accurate.
 - 4) Robust verification process: The workflow implements a robust verification process that guarantees the authenticity and novelty of patent applications.
 - 5) Seamless data integration: The patent database is seamlessly integrated with the blockchain database, ensuring the security and integrity of all data.
 - 6) User-friendly dashboard: The user dashboard provides users with a single point of access to manage their patent applications and track their status.
- Comprehensive Verification Process: The verification process covers all legal requirements and standards for patent applications, including originality, novelty, and compliance with utility and non-obviousness requirements.
- 7) Secure and transparent database: A blockchain-based patent database ensures the security and integrity of all data and provides transparent records of all patent applications and granted patents.

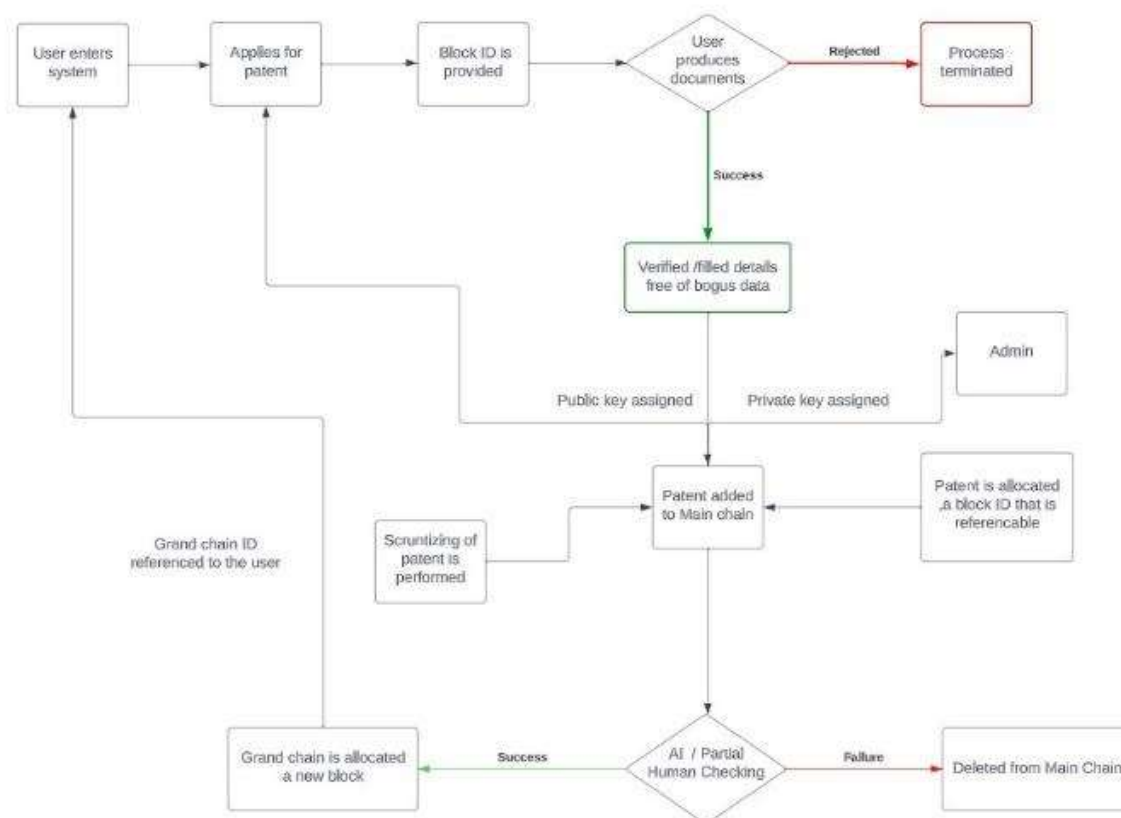


Fig 5.1. Implementation of blockchain

5.2 MVP Model

The following MVP model outlines the key features and functionalities of the patent filing application described in the abstract. By focusing on essential components, we aim to develop a prototype that demonstrates the core value proposition of the system while providing a foundation for future iterations and enhancements.

5.2.1 User Authentication and Profile Management:

It allows users to register and log in securely and implement basic profile management functionalities, such as updating personal information.

5.2.2 Document Submission Interface:

It provides a user-friendly interface for users to submit their patent application documents. It supports for common file formats (e.g., PDF) for document uploads.

5.2.3 Blockchain Integration:

It is useful to integrate a basic blockchain system to store submitted documents securely. Demonstrate the immutability and traceability of records through a simplified blockchain viewer.

5.2.4 Verification Process:

To develop a basic verification process to check document completeness and adherence to patent filing protocols and display verification status to users, indicating whether their application has passed or failed initial checks.

5.2.5 Notification System:

To implement a notification system to update users on the status of their patent application and notify users of important milestones, such as document submission confirmation and verification results.

5.2.6 User Dashboard:

To create a simple dashboard where users can track the progress of their patent application and display relevant information such as submission date, verification status, and any notifications.

5.2.7 Help/Support Section:

To provide users with resources and FAQs to assist them in using the platform and include a contact form or support email for users to reach out for additional assistance.

5.3 Module Plan

In this section, we outline the module plans for developing the patent filing application. These plans encompass key functionalities and features essential for the successful implementation of the system.

5.3.1 Blockchain Integration and Record Storage:

Objective: Integrate blockchain technology to provide secure and immutable storage for patent application documents.

Tasks:

- 1) Research and select appropriate blockchain platform or framework
- 2) Develop smart contracts to facilitate document storage and retrieval
- 3) Implement mechanisms for data encryption and access control
- 4) Test blockchain integration to ensure data integrity and security.

5.3.2 Non-Registration and Rejection Management:

Objective: Implement a robust system for managing patent applications that are not registered or rejected.

Tasks:

- 1) Design workflows to handle non-registration and rejection scenarios.
- 2) Develop mechanisms for allocating rejected applications to dedicated blockchain blocks.
- 3) Implement processes for notifying users of application status and next steps.
- 4) Test non-registration and rejection management workflows to ensure accuracy and efficiency.

5.3.3 Administrative Management and Access Control:

Objective: Create an administrative interface for managing user accounts, access permissions, and system configurations.

Tasks:

- 1) Design user roles and permissions hierarchy.
- 2) Develop an admin dashboard for user account management and access control.
- 3) Implement features for managing system settings and configurations.
- 4) Test administrative management functionalities to ensure usability and security.

5.3.4 AI-Driven Verification and Assessment:

Objective: Integrate AI algorithms to conduct rigorous checks and assessments of patent applications.

Tasks:

- 1) Research AI models and algorithms suitable for patent verification.
- 2) Develop mechanisms for integrating AI-driven verification into the patent filing process.
- 3) Train AI models using labeled datasets to recognize patterns of patent infringement and non-originality.
- 4) Test AI-driven verification against a variety of patent application scenarios to evaluate accuracy and reliability.

VI. IMPLEMENTATION

6.1 Existing System

The existing solution for patent filing applications lacks transparency, often resulting in difficulty tracking application status. It suffers from inefficiencies due to long processing times and bureaucratic hurdles. Security concerns arise from vulnerability to fraud and data breaches, compromising intellectual property integrity. Structural inconsistencies cause delays due to conflicting demands between different rules. Proving authenticity is challenging and time-consuming. Additionally, there's a significant risk of patent infringement, with no effective prevention mechanism. Moreover, accessibility is limited for small businesses and individuals due to high costs and complex processes.

6.2 Proposed System

This document outlines a proposed system for a blockchain-based patent filing application with AI-powered features. The system aims to streamline the patent filing process, enhance security and transparency, and foster innovation by leveraging the cutting-edge technologies of blockchain and artificial intelligence.

The patent application process is designed to be efficient, transparent, secure and reliable. It leverages the power of blockchain technology and artificial intelligence to improve the patent registration process and protect the intellectual property rights of innovators and inventors.

Patent application flowchart workflow description:

1. Users log into the system and apply for patents. Provide the user with a blocker ID.
2. Patent applications are examined for compliance with various patent application laws, regulations and standards.
3. If the patent application meets all the requirements, a new block is distributed on the main chain.
4. Users create the documents required for patent registration.
5. Documents are verified and transcribed to ensure they do not contain false information.
6. Assign a public key and a private key to the user.
7. The patent is added to the main chain and provides an identity block for use.
8. String size id refers to the user.
9. A patent application is subject to intellectual property/partial book review for originality and novelty.
10. If it is determined that the patent application is original and new, the patent application will be approved and granted. Otherwise, it will be rejected and removed from the main chain.

If not registered or rejected:

- 1) A patent application is filed for this particular blockchain.
- 2) The patent application is seamlessly integrated into the main chain to ensure traceability and immutability of all documents.

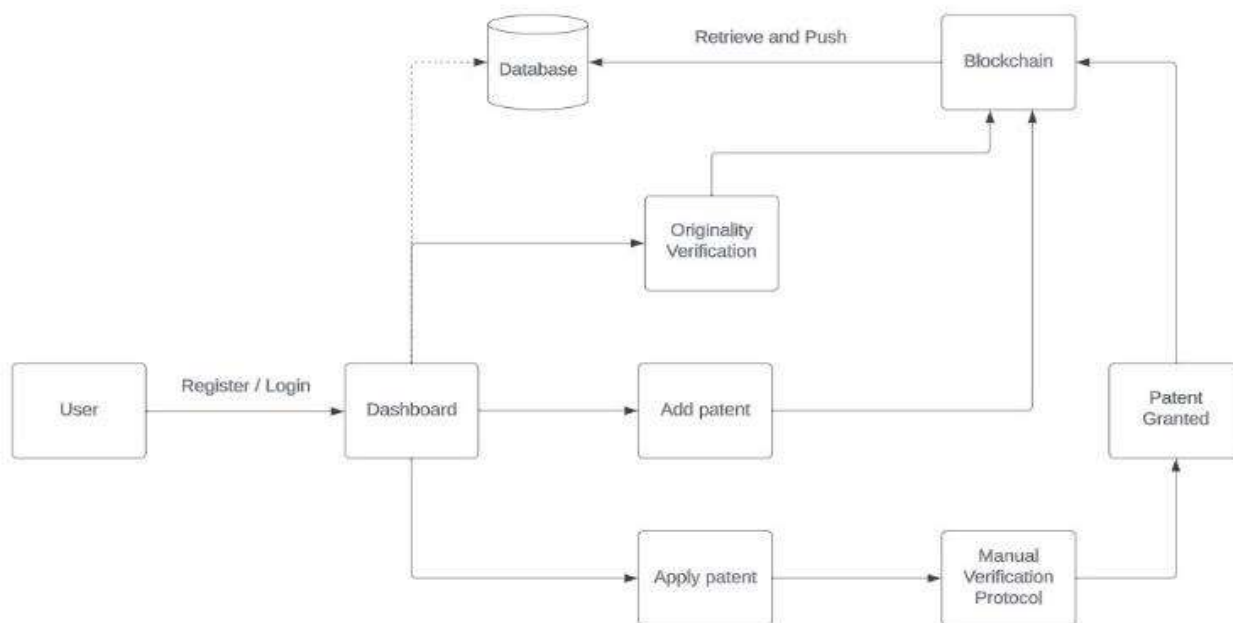
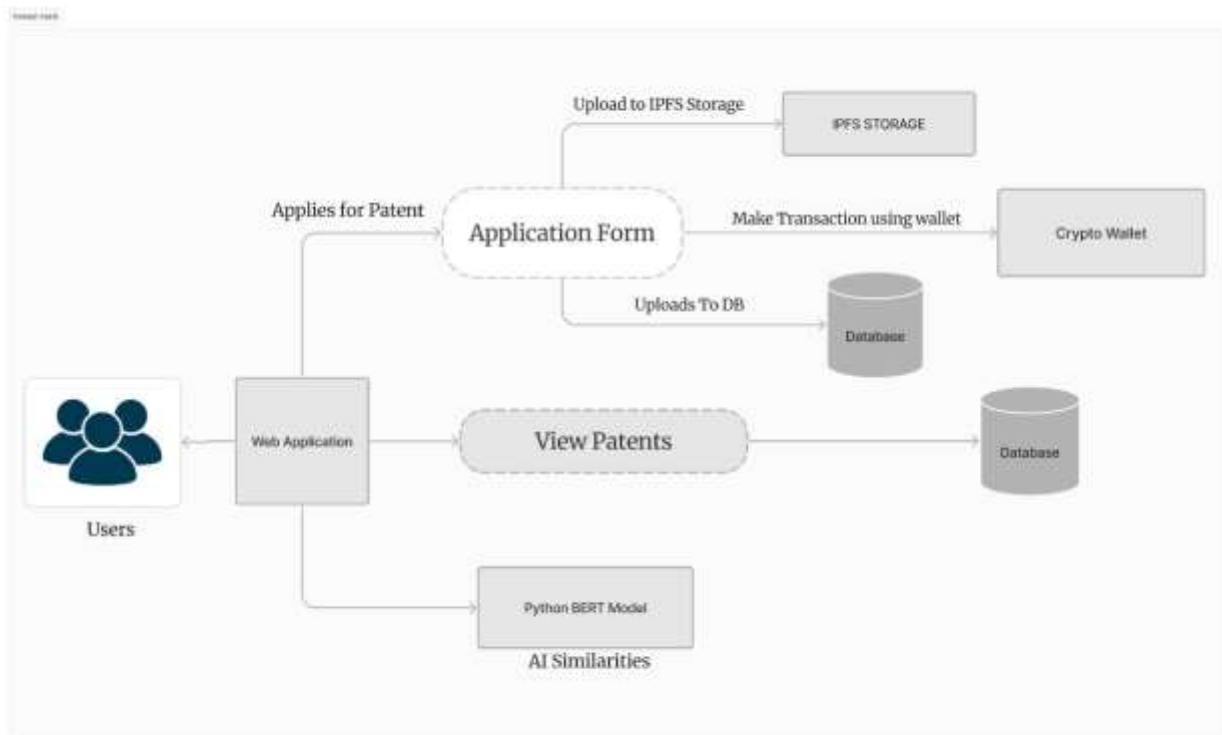


Fig 6.1 Workflow of the application

BLOCK	MINED ON	GAS USED
96	2024-03-26 09:32:51	22944
95	2024-03-25 16:18:02	22312
94	2024-03-25 16:17:15	22312
93	2024-03-25 18:06:32	22048
92	2024-03-25 18:04:42	22048
91	2024-03-25 09:53:02	22096
90	2024-03-25 09:48:37	432581
89	2024-03-25 09:48:37	432489
88	2024-03-25 09:45:20	22308
87	2024-03-25 09:44:03	22308

Fig 6.2 Application and patent transaction blocks

6.3 System Architecture



VII. CONCLUSION

The Patent Application Project has developed a new workflow to streamline the patent registration process that harnesses the power of blockchain technology and artificial intelligence (AI). The workflow is designed to be efficient, transparent, secure and reliable while protecting the intellectual property rights of innovators and inventors.

The integration of tokenization of intellectual property rights, decentralized identity management solutions, and machine learning for prior art search holds significant promise for the future implementation of the described patent filing application. Tokenization enables fractional ownership and trading of patents, enhancing inventors' ability to monetize their inventions and allowing investors to participate in innovative projects. This feature also facilitates transparent and auditable record-keeping of ownership transfers and licensing agreements, thereby reducing disputes and increasing the liquidity of intellectual property assets. Decentralized identity management solutions enhance security and privacy by enabling users to maintain control over their identity information, mitigating the risk of identity theft and unauthorized access to sensitive data during the patent registration process. Additionally, the integration of machine learning algorithms for prior art search streamlines verification processes by automatically analyzing vast patent databases and scientific literature to identify existing inventions that may affect patent applications, ultimately reducing examination time and enhancing efficiency. These future implementations promise to revolutionize the patent registration process, making it more efficient, secure, and accessible in an increasingly digital landscape.

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