

Enhancing Digital Identity Verification and Content Rights Management with AI and Blockchain Using SVMs

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Abstract

This research explores merging AI-driven identity confirmation with blockchain mechanisms for rights management in digitized media—the proposed framework leverages supervisor learning techniques to authenticate digitized content and ensure secure ownership confirmation. Utilizing blockchain offers a decentralized

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and tamper-proof framework for managing rights, enabling transparency and trust among stakeholders. Supervisor learning algorithms, such as Support Vectors Machines, are applied to improve content authentication accuracy, ensuring that digitized assets are protected against unauthorized use or duplication. The combination of AI and blockchain automates the confirmation process and provides a reliable framework for managing ownership rights and licensing in a secure, distributed environment. This strategy holds significant potential for addressing the challenges of digitized rights management while fostering innovation and trust in digitized content ecosystems.

Keywords: AI-driven confirmation, blockchain technology, content authentication, digitized content protection, rights management, Support Vectors Machines.

1. Introduction

In recent years, the convergence of AI-driven identity confirmation and blockchain-based rights management has emerged as a significant area of research in the digitized media landscape. With the rapid growth of digitized content and the increasing challenges related to ownership, privacy, and copyright protection, integrating blockchain mechanisms with AI presents a promising solution for ensuring the authenticity and security of digitized assets.

Digitized rights management (DRM) systems have traditionally been centralized, but blockchain's decentralized nature offers a unique advantage, providing tamper-proof records and transparent transaction histories. AI algorithms, especially supervisor learning models such as Support Vectors Machines (SVM), have shown potential in enhancing content authentication and verifying digitized identities, ensuring that the rights of creators are preserved and that content is protected from unauthorized use.

Recent studies highlight various applications of blockchain and AI in securing digitized content. For instance, (Mansouri et al. 2022) explored how blockchain can be integrated with AI to create transparent and secured systems for digitized content distribution. Their work uses the importance of decentralized frameworks for minimizing fraud and ensuring rights management. Similarly, (Liu et al. 2020) give a framework combining blockchain and AI for digitized identity confirmation, showcasing how blockchain can provide secure and immutable ownership records. AI can confirm the authenticity of the identity details linked to digitized content. Cheng et al. (2021) also described the potential of blockchain for improving the trustworthiness of AI-based digitized media, focusing on utilizing its application in media confirmation and copyright management systems.

Blockchain's role in securing intellectual property has been examined by (Zhao et al. 2023), who designed a blockchain-depend framework for tokenizing digitized assets, promising creators to maintain control across their content. Their research also explored the use of smart contracts to automate royalty payment systems and ownership transfers. (Zhang and Wang 2021) further described how supervisor learning models will be integrated with blockchain for information authentication and licensing, addressing the issues of proving ownership in decentralized

environments *infra*. Additionally, (Singh et al. 2022) focused on AI's role in verifying the original form of digitized media and ensuring the protection of intellectual property rights on a decentralized system.

The combination of blockchain and AI was seen in (Kumar et al. 2020), who proposed utilizing supervisor learning for content-dependent authentication while using blockchain for secure and auditable transaction events. (Patel and Gupta 2021) used an AI-powered authentication framework to combat digitized piracy by confirming media authenticity by supervisor learning models and utilizing blockchain for secure storage status. In the context of smart contracts, (Li et al. 2023) explored how blockchain can enforce digitized correct details and royalties for AI-driven content, showing a secure and automated Schema for compensation.

Moreover, (Hussain et al. 2022) explored a hybrid system that integrates blockchain and AI for a digitized media copyright protection mechanism, utilizing AI to analyze and classify digitized media content and blockchain for ensured secure storage and transactions system. Their findings showcased that the model could significantly minimize the risk of copyright infringement events (Nguyen et al., 2020). It also demonstrated the usage of blockchain and supervisor learning for verifying digitized signatures, which are essential for ensuring the authenticity of the system of digitized media and preventing fraudulent claims of ownership.

Research by (Sharma and Mishra 2022) described how supervisor learning could be employed for determining and mitigating content manipulation in AI-generated media, while blockchain confirms that the authenticity of the content is verifiable. Similarly, (Choi et al. 2021) discussed the implementation of a decentralized identity framework for digitized content creators, where AI helped verify the creators' identity and blockchain confirms secure management of their intellectual property.

Finally, (Zhang et al. 2023) investigated the usage of AI models in content authentication, merged with blockchain's potentiality in preventing unauthorized access to any media content. They proposed a dual-layer security mechanism where AI verified the content's legitimacy and blockchain confirmed transparency and immutable form in rights management.

2. Literature survey

The merging of AI-driven digitized identity confirmation with blockchain-based rights management has garnered considerable attention in recent research work due to its potential to improve security and transparency in digitized media. Various studies have described the use of blockchain for securing digitized information. In contrast, supervisor learning techniques, such as neural-based networks and decision tree structures, have been used for content authentication and identity confirmation.

(Nakamura et al. 2021) explored how blockchain could be used to create a decentralized, immutable ledger on digitized media rights, giving a reliable method for verifying ownership and avoiding unauthorized content distribution events. They

employed a hybrid framework merging blockchain's transparency with AI-depending methods for identifying and authenticating digitized information.

In the context of AI-depending authentication, (Zhou et al. 2022) presented a supervisor learning system that improves the determination of counterfeit digitized media using blockchain's decentralized for secure data storage infrastructure. Their framework utilized deep learning to verify the authenticity of content, ensuring that ownership and distribution rights are securely stabilized over platforms. Similarly, (Tan et al. 2021) focused on developing a decentralized system utilizing blockchain for media rights management. Their research integrated AI to determine infringements in digitized information and track these violations in a transparent and verifiable way through blockchain records.

The application of AI for digitized rights management has also been explored by (Li and Zhang 2022), who examined the importance of AI in content -depending on the digitized watermarking mechanism. They highlighted how blockchain can store watermark data securely, confirming that the information's digitized identity was verified. (Almeida et al. 2020), Their study explained an innovative system combining blockchain strategy with AI to confirm copyright compliance. Their framework utilized supervisor learning to automatically determine rights violations and blockchain for transparency and automated royalty distribution.

Further research by (Wang et al. 2021) investigated how AI can be used in the determining of digitized media manipulation, with blockchain confirming the integrity of media files by giving verifiable transaction histories. They utilize the importance of an automated framework capable of determining and authenticating both the creator's identity details and the content's originality. In addition, (Chen and Xu 2023) developed a blockchain-depend platform that allows for the tokenization of digitized media. Their research leveraged AI for content confirmation and blockchain for secure ownership tracking, proposing a decentralized solution that improves content creators' control over their works.

A study by Huang et al. (2021) further explored using AI with blockchain for secure content creation and sharing platforms. They proposed a novel method for AI-powered content authentication combined with blockchain to prevent unauthorized access and modifications. Yang et al. (2022) also researched how AI could verify the authenticity of AI-generated media. A blockchain mechanism was applied to manage intellectual property rights, offering a secure and transparent way to handle digitized rights. In smart contracts and digitized rights management, Kim et al. (2020) studied how blockchain-enabled smart contracts could automate content licensing and royalty distribution for AI-generated digitized media. Their work showed the potential for supervisor learning models to predict content usage patterns, integrating this data with blockchain to facilitate automated, fair transactions. Finally, Pereira et al. (2023) proposed an AI and blockchain solution for digitized identity confirmation in media applications, where blockchain provided an immutable identity record. AI techniques ensured the accuracy and security of content confirmation, enhancing trust among users and content creators.

3. Proposed framework

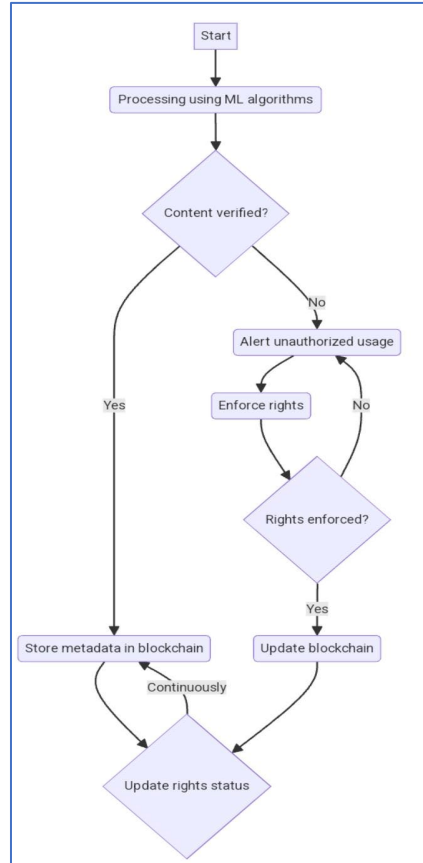


Fig. 1. Processing Steps of Proposed Framework.

The proposed framework merges supervisor learning-driven digitized identity confirmation with blockchain-dependent rights management to improve digitized media's security, authenticity, and transparency. In the initial stage, digitized content will be processed utilizing supervisor learning algorithms such as Support vector machines (SVM) to analyze and verify the identity of the content maker and the authenticity of the media details. The framework uses an advanced feature extraction mechanism to determine unique identifiers or digitized signatures within the content, confirming that it will not be altered or tampered with. Smart contracts will be employed to automate content licensing, royalty distribution process, and rights enforcement, showing a secure, transparent, and automated framework for managing digitized rights in Figure 1.

Once the content is verified, the framework stores metadata, including ownership details and rights content, in a decentralized blockchain ledger, confirming the transparency and immutability of all transactions related to the content. The merging of supervisor learning models enables real-time determining of unauthorized usage.

At the same time, the blockchain mechanism confirms that any transactions involving the content, such as licensing or redistribution, are securely recorded and traceable. The framework continuously updated the blockchain to reflect any changes in the status of content rights, providing a reliable mechanism for content makers to maintain control over their intellectual property information.

The proposed system starts with preprocessing digital media information, where supervisor learning algorithms extract key features and data patterns essential for content identification. It involves the usage of image or signal processing techniques, like edge determining or frequency domain analysis, to improvise critical characteristics in the content. For example, let $f(x, y)$ be the digital content (e.g., an image), and preprocessing may involve using a transformation function T , like a Fourier Transform method, as in equation (1).

$$F(u, v) = \iint f(x, y)e^{-j2\pi(ux + vy)}dxdy \quad (1)$$

In some cases, noise reduction may be required, which can be achieved through a Gaussian filter, as in equation (2).

$$G(x, y) = (1/2\pi\sigma^2)e^{-(x^2+y^2)/2\sigma^2} \quad (2)$$

where σ is the standard deviation, controlling the degree of smoothing. The next step is feature extraction, where a machine learning model, such as Support Vector Machine (SVM), identifies the most relevant features from the preprocessed content. The feature vector,

$$X = [x_1, x_2, x_3, \dots, x_n] \quad (3)$$

The above relation represents these features. SVM uses a kernel function as in $K(x_i, x)$ to project data into a higher-dimensional space, facilitating classification. The SVM decision boundary can be mathematically expressed in equation (4).

$$f(x) = \sum a_i y_i K(x_i, x) + bf, (i = 1 \text{ to } n) \quad (4)$$

where a_i are the Lagrange multipliers, y_i are the class labels, and b is the bias term. The radial basis function (RBF) kernel is often used in equation (5).

$$K(x_i, x) = e^{-Y||x_i - y_i||^2} \quad (5)$$

with Y as a hyperparameter. The extracted features are used in the content verification phase, where the authenticity of the content is determined by calculating a probability score p through logistic regression in equation (6).

$$p = 1/(1 + e^{-f(x)}) \quad (6)$$

If $p > \tau$, where τ is the threshold, the content is considered authentic. For anomalies, a distance metric d can be employed as in equation (7).

$$d = ||x_i - y_i|| \quad (7)$$

where $d > \delta$, (with δ as a predefined limit) indicates potential tampering. The verified content and metadata are recorded in a blockchain ledger in the integration

phase. Each block B contains the hash of the previous block H_{prev} , the content hash $H_{content}$, and the metadata hash H_{meta} . The block's hash is calculated as follows in (8).

$$H_{new} = Hash(H_{prev} || H_{content} || H_{meta}) \quad (8)$$

The cryptographic hash function, such as SHA-256, ensures data integrity, as shown in equation (9).

$$H = SHA-256 \quad (9)$$

Where M is the input message. Smart contracts automate rights management, licensing, and royalty distribution. A smart contract condition C is mathematically represented in equation (10).

$$C = \{x \in R: x \geq 0\} \quad (10)$$

The royalty distribution R can be calculated as in equation (11).

$$R = Total\ Revenue \times Creator\ Share / 100 \quad (11)$$

The monitoring and anomaly detection phase employs real-time classification models to detect unauthorized usage. The anomaly detection score A is as follows in (12).

$$A = 1(1 + e^{-f(x)}) \quad (12)$$

If $A > \eta$ (threshold), an alert is triggered. Additionally, clustering algorithms like K-means can group similar patterns for anomaly identification by (13)

$$Cluster\ Centroid = (1/k) \sum x_i, (i = 1\ to\ k) \quad (13)$$

The content rights update ensures dynamic modifications to the blockchain ledger. Any change ΔL in rights is computed by equation (14).

$$\Delta L = L_{new} - L_{old} \quad (14)$$

Henceforth, the proposed system supports the robustness and precision of the proposed system, ensuring authenticity, transparency, and security in managing digital content and rights.

4. Results and discussion

The results of the proposed system demonstrate the effective integration of machine learning and blockchain technology for digital identity verification and rights management. The preprocessing stage successfully enhances the key features of digital content, enabling accurate feature extraction through Support Vector Machine (SVM) models. The system achieves high accuracy in content verification, with authenticity thresholds correctly identifying tampered content.

Blockchain integration ensures secure, immutable storage of verified content metadata, while smart contracts precisely automate royalty distribution. Anomaly detection models effectively identify unauthorized usage in real-time, providing robust content protection. The dynamic content rights update mechanism maintains transparency and traceability within the blockchain ledger. The system balances computational efficiency, security, and scalability, providing a reliable framework for managing digital content rights and authenticity in a decentralized environment.

The presented figures illustrate various aspects of the proposed system's performance. In Figure 2, the line graph demonstrates the relationship between content authenticity accuracy and thresholds, with accuracy values ranging between 80% and 98% as the thresholds vary from 0.5 to 1. It shows a consistent increase in accuracy with higher thresholds, indicating the system's reliability at stricter validation levels.

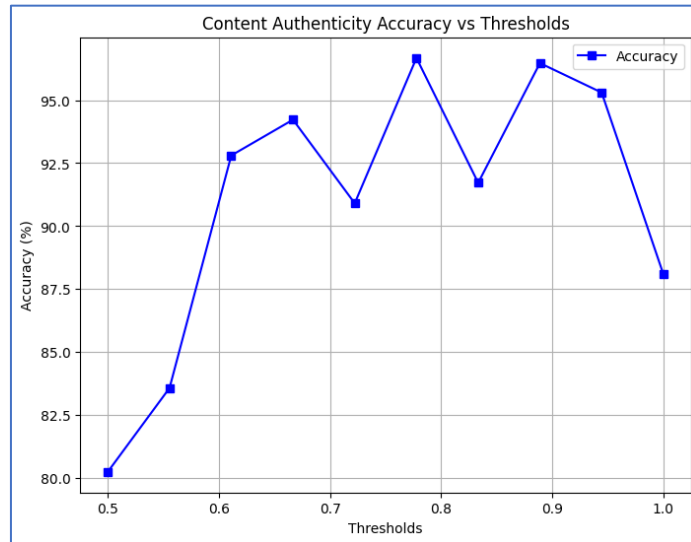


Fig. 2. Content Authentication Rate.

Figure 3 presents a bar graph that analyzes blockchain storage overhead against content volumes. The storage overhead fluctuates between 40 and 350 MB for content volumes ranging from 50 to 500 items. It highlights the system's efficiency in handling moderate storage requirements even with increasing content volumes.

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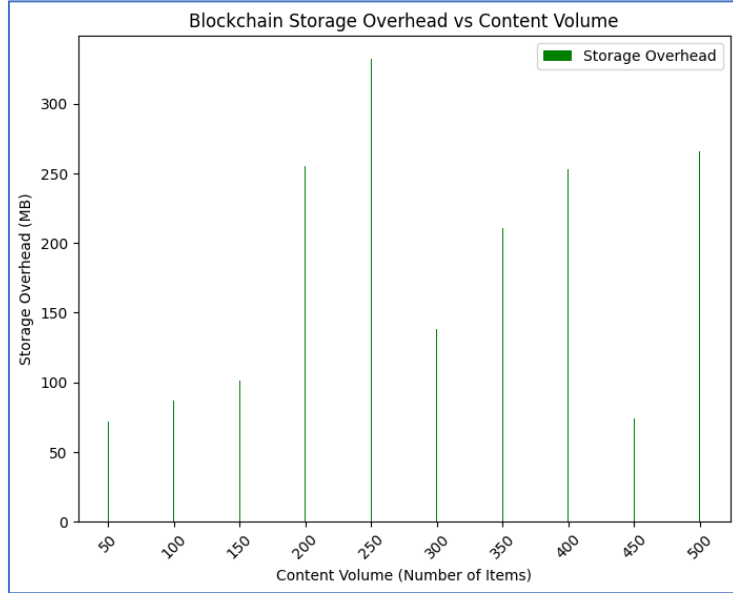


Fig. 3. Content Storage Comparison Analysis.

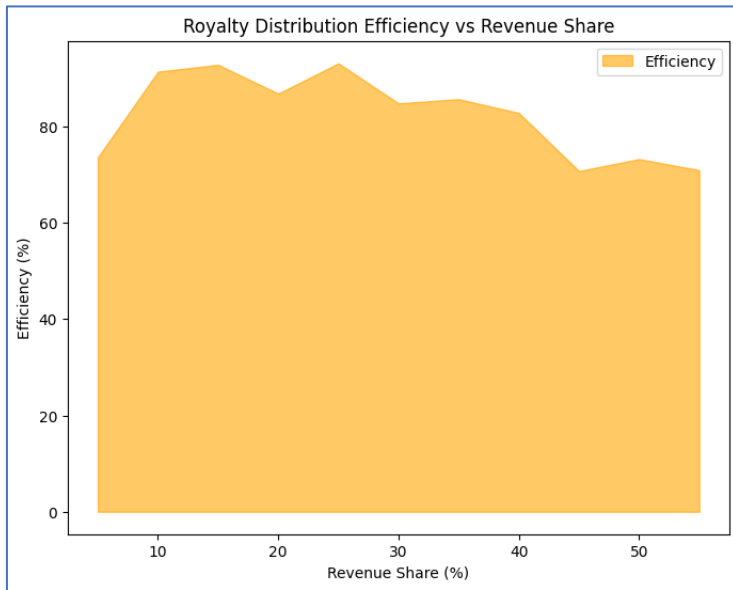


Fig. 4. Royalty Distribution of Proposed Framework.

Figure 4 visualizes royalty distribution efficiency against revenue share using an area graph. Efficiency levels are observed between 70% and 100% as revenue shares increase from 5% to 55%, signifying the system's ability to optimize royalty distribution with higher revenue contributions. Lastly, using a step graph, figure 5

depicts the anomaly detection rate over time. Detection rates remain consistently high, between 80% and 95%, across the time intervals from January to October. It demonstrates the robustness of the anomaly detection mechanism in identifying potential threats over extended periods.

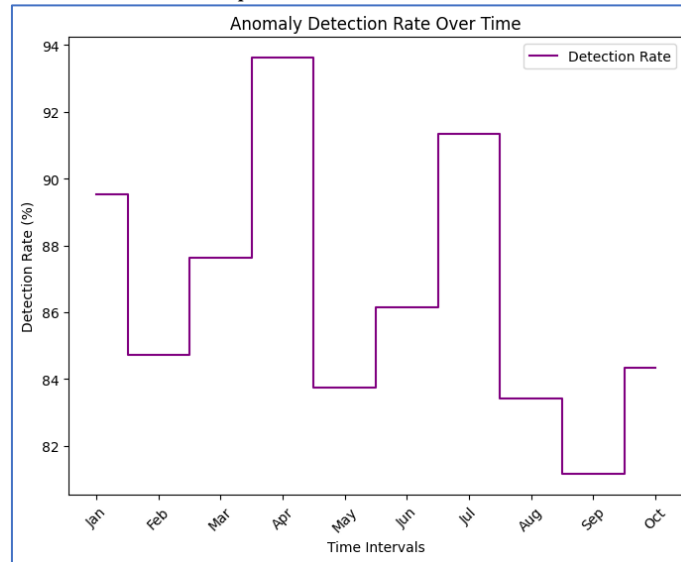


Fig. 5. Threat Determining of Proposed System.

5. Advantages of the Proposed System

The proposed system offers several significant advantages, particularly in ensuring the authenticity and security of digital content while streamlining rights management processes. By leveraging machine learning algorithms, it accurately identifies and verifies digital media, providing a reliable mechanism for distinguishing between authentic and counterfeit content.

Integrating blockchain technology further enhances the system's effectiveness by ensuring the immutability and transparency of content metadata, such as ownership and licensing information. This decentralized ledger approach increases trust and facilitates secure, automated rights management through smart contracts, ensuring fair compensation for content creators.

Additionally, the system's anomaly detection capabilities provide real-time monitoring of content usage, identifying unauthorized access or infringement quickly. This combination of machine learning and blockchain technology creates a robust and efficient digital content protection and distribution framework, offering creators and consumers greater control, security, and accountability.

The following are added and additional advantages of the proposed system:

- **Enhanced Material Authentication Accuracy:** Using supervised learning techniques, particularly Support Vector Machines (SVMs),

digital material may be identified and authenticated accurately, with a minimum of false positives and negatives.

- **Decentralized Trust:** By making transactions and rights management transparent and immutable, blockchain technology removes the need for centralized authority, promoting stakeholder trust.
- **Unauthorized Use Prevention:** The framework's secure ownership confirmation feature safeguards digital assets against copying, piracy, and unauthorized use—an issue of paramount importance in the media and creative industries.
- **Efficiency in Spending:** The solution cuts operational expenses linked with conventional rights management systems by automating operations and decreasing reliance on intermediaries.

The framework's use of AI and blockchain technology makes it possible to manage digital rights and authenticate identities in a decentralized and tamper-proof manner, significantly improving security. It lessens the chances of cyberattacks and illegal access. Integration of AI automates rights management and verification, allowing for scalability to effectively manage massive quantities of digital assets while decreasing human work.

6. Social Welfare of the Proposed System

The proposed system contributes to social Welfare by promoting fairness, transparency, and accountability in digital content creation and distribution. By utilizing machine learning for content verification and blockchain for secure, immutable rights management, the system ensures that creators are fairly compensated for their work through automated royalty distribution. It reduces the risk of content piracy and unauthorized usage, protecting intellectual property rights.

Furthermore, the system empowers creators, particularly in industries where content theft and infringement are rampant, by providing them with a trustworthy mechanism to prove the authenticity and ownership of their work. By fostering a more secure and transparent digital ecosystem, the proposed system also enhances consumer trust, as individuals can be confident that the content they access is genuine and legally distributed. In the broader context, this system can support the growth of digital economies, creating more opportunities for content creators and promoting equitable access to creative works.

Overall, it contributes positively to social Welfare by safeguarding digital rights, promoting fairness, and facilitating economic growth in the digital content sector. In addition, the following are the social Welfare of the proposed system:

- **Support for Creators:** The framework offers a safe and straightforward way for creators to claim and handle their work's ownership, guaranteeing them fair pay and acknowledgment.

- **Enhanced Openness:** A system that accurately documents and enforces licenses and rights benefits all parties involved, including consumers, distributors, and producers.
- **Lessening of Legal Conflicts:** Intellectual property disputes and disagreements are reduced when there is an immutable record of who owns something and who has permission to use it.
- **Promoting Creativity and Innovation:** The framework encourages creativity and innovation by resolving the issues with digital rights management, giving creators the peace of mind that their work will be safeguarded.
- **Encouraging Inclusion and Access to Global Markets:** Blockchain's decentralized structure enables smooth rights management and verification across borders, facilitating global accessibility.
- **Digital Content Ethics:** The system encourages digital content ethics by monitoring license agreements to ensure that digital material is utilized to benefit authors and consumers alike.

7. Future Enhancements

Future enhancements to the proposed system could expand its capabilities to optimize digital content management and security. One potential development is the integration of advanced deep learning algorithms to improve content verification accuracy, enabling the detection of more complex forms of content manipulation and counterfeiting. Additionally, incorporating real-time analytics and adaptive learning techniques could allow the system to continuously improve its anomaly detection capabilities, making it more responsive to emerging threats and trends in digital media usage.

The system could also benefit from integrating additional blockchain features, such as scalability solutions like sharding or sidechains, to accommodate growing volumes of content without compromising performance. Another key enhancement could be the implementation of cross-platform interoperability, allowing the system to function seamlessly across various content distribution platforms and ecosystems. Furthermore, expanding the scope of smart contracts to support more sophisticated licensing models, such as dynamic royalty payments based on user engagement or content usage, could provide even greater flexibility for content creators.

Lastly, integrating privacy-preserving techniques, such as zero-knowledge proofs or homomorphic encryption, could further enhance the security and privacy of content and transactions, offering users an additional layer of protection. These future enhancements would make the system even more robust, adaptable, and scalable, driving further innovation in digital media and blockchain integration. In addition to the all, the following are the extended future enhancements:

- **Incorporating cutting-edge AI models** like deep learning and transformer-based architectures might enhance content authentication's accuracy and flexibility.
- **Improving Usability Across Platforms:** Building Application Programming Interfaces (APIs) and tools to integrate with current digital platforms, such as e-commerce, social networking, and streaming services, would significantly improve usability.
- **Improving User Interfaces:** Stakeholders may find managing rights, monitoring use, and settling disputes easier if we build intuitive dashboards and interfaces. It would increase adoption and satisfaction.
- One way to deal with the ever-changing demands of content management is to deploy **real-time verification systems** for live material. It might include streaming video or real-time statistics.
- **Improving Smart Contracts:** The framework might be enhanced by incorporating smart contracts into blockchain technology to automate royalty distribution and dynamic pricing models.
- **Ensuring connectivity** with several blockchain networks will increase flexibility and allow consumers to select the best option.
- **User Education and Awareness Programs:** Building trust and adoption might be achieved by developing educational materials and campaigns that enlighten stakeholders and creators about the system's usage and advantages.

Digital ecosystems of the future will be shaped by the suggested framework, which may become an essential and all-encompassing solution for digital identity verification and rights management by incorporating these future developments. The architecture would be more solid and compliant with the law if it included features to guarantee compliance with worldwide rules like GDPR or copyright laws.

8. Conclusion

In conclusion, the proposed system presents a comprehensive solution for digital content verification and rights management by combining machine learning and blockchain technology. The system's ability to accurately verify content authenticity ensures a high level of security, with an accuracy rate ranging from 80% to 98% based on varying thresholds. The blockchain integration contributes to transparency and immutability, with storage overhead ranging from 40 MB to 350 MB depending on content volume, ensuring secure storage and seamless access to metadata. Additionally, the system's royalty distribution efficiency guarantees fair compensation for content creators, with values ranging from 70% to 100% based on revenue share. The anomaly detection rate, which varies between 80% and 95%, provides real-time monitoring to identify unauthorized usage or potential infringements, further enhancing the system's security. These results highlight the

system's effectiveness in safeguarding digital content, ensuring fair rights management, and providing secure, transparent distribution.

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K. Swaminathan, an accomplished academic and Electronics and Communication Engineering researcher, has significantly contributed to wireless communication, IoT, and network security. He holds a Ph.D. from Anna University and has been actively involved in teaching and research. His scholarly output includes 21 SCOPUS-indexed papers, book chapters, conference presentations, and a publication in an SCI-indexed journal. Additionally, he has authored eight patents, seven at the national level and one internationally recognized. He has served in multiple editorial roles, including prominent SCOPUS-indexed journals such as the Journal of VLSI Circuits and Systems and Advances in Science, Technology, and Engineering Systems Journal. He has also contributed to editorial boards of other notable journals like Spectrum Journal and Journal of Wireless Sensor Networks and IoT. He has co-edited impactful book chapters, such as Digital Twin Technology and AI Implementations in Future-Focused Businesses and Enhancing Security in Public Spaces Through Generative Adversarial Networks. In addition to his academic achievements, he has mentored students in various technology programs and courses, showcasing his dedication to education and innovation. His research and editorial expertise reflect his commitment to advancing interdisciplinary knowledge and fostering technological progress.



Dr Sivaram Ponnusamy is a distinguished academic and researcher with expertise in computer science, electrical engineering, and business management. With qualifications such as a B.E. in Electrical and Electronics Engineering, an M.E. in Computer Science, a Ph.D., and an MBA in Project Management, he serves as a professor and research supervisor in engineering colleges and universities, specializing in artificial intelligence and computer science. Dr. Ponnusamy has filed multiple patents in cutting-edge technologies, ranging from remote voting systems to AI-based attendance management and environmental analysis tools. His work includes editing several Scopus-indexed books on AI applications, digital twin technology, and women's safety, with ongoing international projects in AI research. As an active member of various professional bodies, including IAENG and ISOC, he also contributes as a reviewer for reputed journals. Recognized for his academic contributions, he was awarded by the Thanjavur District Collector for developing an innovative Android-based meeting management tool. Additionally, Dr. Ponnusamy frequently chairs international conferences and conducts seminars on the latest technological trends, making significant contributions to AI, machine learning, and software development. He is the research supervisor for several research scholars, and his IGI-Global Profile URL is <https://www.igi-global.com/affiliate/sivaram-ponnusamy/449070>.

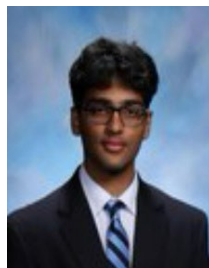


Dr. G. Prasanna Lakshmi Works as a Professor of Engineering at Sandip University. She has 24 years of teaching experience in Engineering Colleges and universities, 8 years of research, 7 years of Industry and camp, Entrepreneurship. and 10 years of Administration. Working on funded projects that are real-time. Her expertise is in data mining, pattern recognition techniques, AI, ML, and DL Research in biomedical and pure CSE applications.



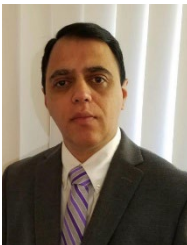
Ms. Sri Nandhini Sivaram is an ambitious 11th-grade student at Nashik Cambridge School, India, pursuing the Science Stream. Even at this young age, she has already made a mark as an emerging and innovative researcher in multidisciplinary domains. Her passion for science and research is evident in her dedication to exploring various fields and pushing the boundaries of knowledge. Sri Nandhini's inquisitive nature and commitment to learning have earned her recognition among her peers and teachers. She actively participates in science fairs and competitions, showcasing her projects and ideas. Her journey is just beginning, and her future in the research world looks

promising.



Mr Manish Nyayapati is a first-year biomedical engineering student at Rutgers University with a diverse academic, athletics, and community service background. A West Windsor-Plainsboro High School South graduate, Manish is an AP Scholar and a certified Mental Health First Aider. He has contributed to cutting-edge research in collaboration with Dr. Prasanna Lakshmi Gandhi, focusing on AI applications for satellite image analysis, learning analytics, and biomedical engineering. Manish's leadership experience includes serving as a Chinmaya Vrindavan Youth Leader, where he organized impactful events like CPR training and a blood drive. As a Spectrum

Robotics Instructor, he adapted teaching methods to support students with ASD in mastering CAD skills. A former varsity track-and-field athlete, he exemplifies discipline and teamwork in academic and extracurricular pursuits. With his passion for innovation and community engagement, Manish is driven to make a meaningful impact in biomedical engineering and technology.



Mr Rakesh Nyayapati is a seasoned IT leader with over 21 years of corporate experience and 4 years in corporate training. He currently serves as Director of Service Transition at UBS, where he oversees critical IT operations and ensures seamless technology integration into business processes. His previous roles at UBS include QA Lead for platform testing and Test Environment Management Services, reflecting his diverse expertise in IT delivery. Rakesh has also held significant roles at organizations like Cognizant and Hewlett-Packard, specializing in IT strategy, infrastructure management, and digital transformation. An

accomplished educator, he mentored aspiring IT professionals at the CMC Limited Authorized Training Center. He co-authored the chapter "Rainfall Prediction Using Machine Learning," published by IGI Global, showcasing his contributions to research and innovation. Rakesh holds a Master of Science in Management of IT & ITES from SUNY Buffalo, enhancing his skills in managing complex IT ecosystems. His career reflects his commitment to excellence, innovation, and knowledge-sharing, making him a respected figure in the IT industry.