PROJECT ID : 2026PJ-DS33

Topic : NFT-based Intellectual Property (IP) Protection System

Department of Computer Science & Engineering (Data Science)

PRESENTED BY :

Vidhi Singh [2101330100086]
Vedangi Thakur [2101330100087]
Siddharth Sharma [2101330100078]
Viraj Marwaha [2101330100088]
Shibani Suman [2101330100079]

ABES Institute of Technology, Ghaziabad

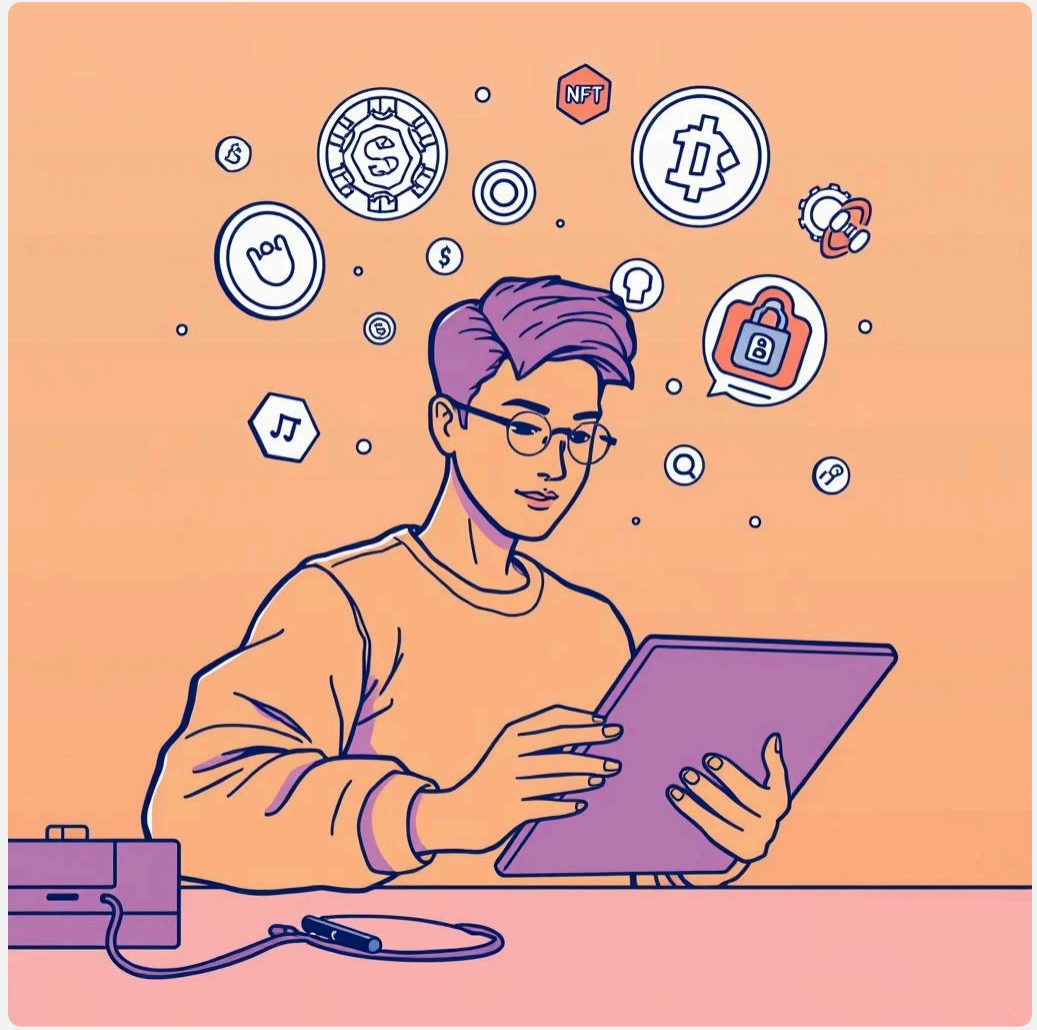
DR. A.P.J. Abdul Kalam Technical University | Session 2025-26

Table of Content

Introduction

Digital creators face rampant unauthorized use and plagiarism. Traditional copyright systems are often slow, costly, and geographically limited. Blockchain technology presents a revolutionary solution, offering a global, immutable, and transparent system that functions as a **digital copyright office.**

This project proposes a blockchain-powered NFT platform for IP protection, ensuring creators retain ownership rights, recognition, and fair compensation for their work in the digital age.



Objectives & Outcomes

Tamper-Proof Ownership

Provide a **digital certificate of ownership** using NFTs, immutable on the blockchain.

Decentralized Storage

Build a **secure storage mechanism** for digital works using IPFS (InterPlanetary File System).

Commercialization & Licensing

Enable creators to **commercialize their IP** through integrated licensing and NFT marketplaces.

Automated Royalty Distribution

Ensure **automatic royalty payments** for both primary and secondary sales via smart contracts.

Problem Statement

Digital Art Theft

Ease of online duplication leads to widespread **art theft and plagiarism** for digital content creators.

Inefficient Copyrights

Existing copyright mechanisms are **time-consuming, expensive, and limited** by legal jurisdictions.

Lack of Verifiable Ownership

Absence of a **global, verifiable ownership system** prevents independent creators from proving authenticity.

Novelty of Project

1	**Blockchain as Digital Copyright Office** Global, decentralized, and immutable proof of ownership.
2	**Integrated Marketplace** Facilitates both sales and licensing of intellectual property.
3	**Smart Contract Royalty Management** Ensures automatic, transparent payments to creators.
4	**Cross-Platform Interoperability** Supports Ethereum, Polygon, and future blockchain integrations for scalability.
5	**Potential AI Integration** For advanced plagiarism detection and IP infringement tracking.

Literature Survey

Proof of Ownership	Paper-based, slow, jurisdiction-limited	NFT metadata only, not IP-focused	**Blockchain-verified, timestamped proof**
Cost & Accessibility	High legal fees, complex process	Gas fees, marketplace-driven	**Low-cost, decentralized, creator-first**
Licensing Support	Manual contracts, lawyers needed	Mostly absent	**Smart contract–driven licensing**
Royalty Tracking	Manual, prone to disputes	Limited to marketplace resale	**Automated, enforced on-chain**
Global Recognition	Not universally accepted	Collectible focus, not legal	Borderless, IP-protection–oriented

Proposed Solution (Methodology)

- **File Upload**

  Creator uploads artwork (image, video, music, etc.) to the platform.

- **Secure Storage (IPFS)**

  File stored in decentralized IPFS, generating a unique content hash for integrity.

- **NFT Minting**

  Metadata (creator details, IPFS link, timestamp) recorded on Ethereum/Polygon blockchain as an NFT.

- **Ownership Record**

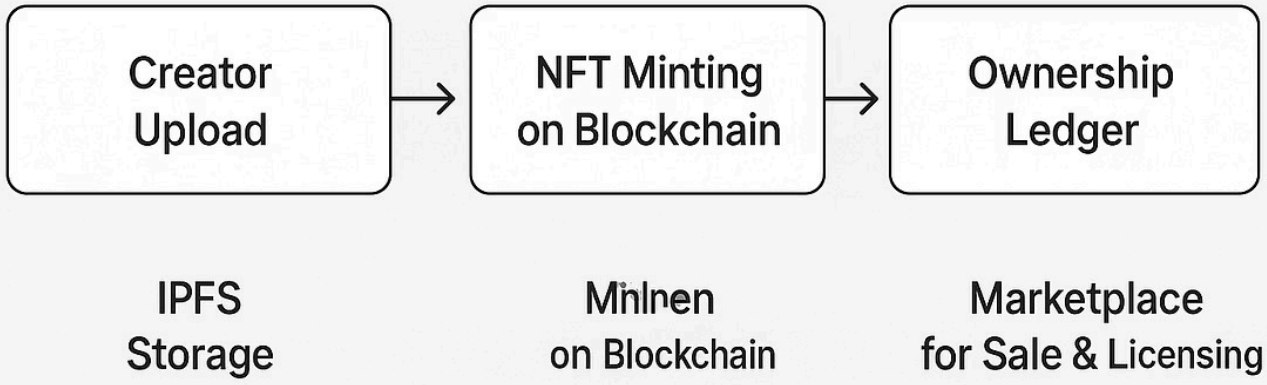
  An immutable blockchain ledger permanently maintains proof of authorship and ownership transfer.

- **Marketplace Integration**

  Creators can sell or license work with automated royalty smart contracts, streamlining transactions.

- **Legal Utility**

  NFT metadata acts as a **timestamped digital copyright certificate** , usable in legal disputes.



System Architecture

This diagram illustrates the comprehensive architecture of our NFT-based IP protection system, from user interaction to blockchain and IPFS integration.

References

- Benet, J. (2014). *IPFS - Content Addressed, Versioned, P2P File System.*
- Ethereum Foundation. (2021). *Ethereum Whitepaper.*
- OpenSea (2023). *NFT Marketplaces and Standards.*
- WIPO (World Intellectual Property Organization). (2022). *Digital Copyright Protection.*

This project leverages foundational blockchain and decentralized storage technologies to address critical challenges in digital intellectual property rights.