WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

NFT Marketplace Using Blockchain

Mrs. Manimegala. M, Preethi Krishna B, Rakshika M A, Sabarigiri S, Pranav Karthick S, Rajesh R

Department of Computer Science and Engineering, Bachelor of Engineering, Sri Shakthi Institute of Engineering and Technology Coimbatore-641062

ABSTRACT

The NFT (Non-Fungible Token) Marketplace is a decentralized digital platform that enables creators, artists, collectors, and traders to securely mint, buy, sell, and manage unique digital assets using blockchain technology. By leveraging decentralized smart contracts, the system ensures transparency, immutability, and ownership verification for every NFT transaction. Built using HTML, CSS, and JavaScript for the frontend and Python (FastAPI/Flask) for the backend, this marketplace provides a seamless user interface with secure wallet integration, real-time ownership tracking, and automated contract execution. The platform supports token minting, metadata storage, bidding features, and a robust transaction history mechanism, offering users a reliable and scalable environment for digital asset trading.

Keywords: Blockchain, NFT, Smart Contract, Digital Assets, Decentralized Marketplace, Tokenization, Web3.

INTRODUCTION

Blockchain technology has revolutionized digital ownership by enabling secure and decentralized recording of asset transactions. NFTs have emerged as powerful tools for representing ownership of unique digital items such as artwork, music, collectibles, and virtual assets. Traditional digital content sharing fails to provide proof of authenticity and ownership, leading to issues of duplication and copyright misuse.

The **NFT Marketplace** addresses this by offering verified asset ownership, transparent trading, and decentralized storage. Built using blockchain networks such as Ethereum/Polygon/Solana, this platform allows creators to tokenize their work through smart contracts, while buyers gain provably-unique digital collectibles. The system integrates wallet authentication, minting functions, and a user-friendly dashboard to ensure a smooth user experience.

By combining blockchain transparency with a modern web design and Python backend, the NFT Marketplace offers a secure and scalable solution for digital asset trading in today's creator-driven economy.

LITERATURE SURVEY

1. Blockchain Technology & Decentralized Ledgers

Research indicates that blockchain ensures immutability, transparency, and trustless interactions between users. Studies show that decentralized ledgers eliminate intermediaries, improving transaction security and speed. This supports the marketplace's use of smart contracts for automated NFT trading.

2. Evolution of NFTs & Digital Ownership

Reports highlight the rise of NFTs in art, gaming, and virtual worlds. Platforms like OpenSea and Rarible use token standards (ERC-721/1155) to allow verifiable digital ownership. This motivates the platform's integration of token standards for interoperability.

3. Smart Contract Automation

Literature shows that smart contracts eliminate fraud, reduce manual errors, and provide transparent execution. Their role in NFT minting and transactions supports the marketplace's ability to securely manage ownership transfers.

4. Decentralized Storage Systems

IPFS and Filecoin research proves that decentralized file storage prevents data loss and ensures permanent accessibility. This validates using IPFS for storing NFT metadata and digital assets.

5. Web3 Wallet Authentication

Studies show that crypto wallets (MetaMask, Phantom, WalletConnect) provide secure user authentication through cryptographic signatures rather than passwords. This enhances marketplace security.

METHODOLOGY

Traditional Digital Asset Systems (Pre-NFT Era)

Before NFTs, creators shared digital files through social media or cloud platforms without ownership protection. Issues included:

- No proof of originality No royalty tracking
- Centralized control Easy duplication

Lack of Ownership Verification

Digital content could be copied infinitely without tracing the original creator. The marketplace solves this with blockchain-based ownership logs.

Communication & Transaction Barriers

Traditional systems required intermediaries (banks, platforms), causing delays and high fees. Smart contracts remove third-party dependency.

EXISTING SYSTEM

1. Centralized Digital Marketplaces

Examples: eBay, Shutterstock, App Stores

Drawbacks:

- No verified ownership High service charges
- No on-chain transparency No unique identification

2. Web2 Art Platforms

Platforms may allow creators to upload art, but cannot prove originality.

Drawbacks:

- No tokenization
- No royalties Risk of content theft

PROPOSED SYSTEM

1. NFT Minting

Users can mint artworks into NFTs using smart contracts, generating unique token IDs stored on the blockchain.

2. Decentralized Transaction System

Smart contracts manage:

- Buying Auctioning
- Royalties Royalties

3. Wallet Integration

Users connect wallets like:

- MetaMask
- WalletConnect
- Phantom

Authentication is passwordless and secure.

4. Real-Time Ownership Tracking

Every transfer is recorded on-chain and updated on the dashboard.

5. Decentralized Storage (IPFS)

Images, metadata, and asset information stored securely and permanently.

6. User Dashboard

Creators and buyers get:

- Minted NFT list
- For-sale items
- Transaction history
- Bidding updates

SYSTEM REQUIREMENTS

SOFTWARE SPECIFICATIONS

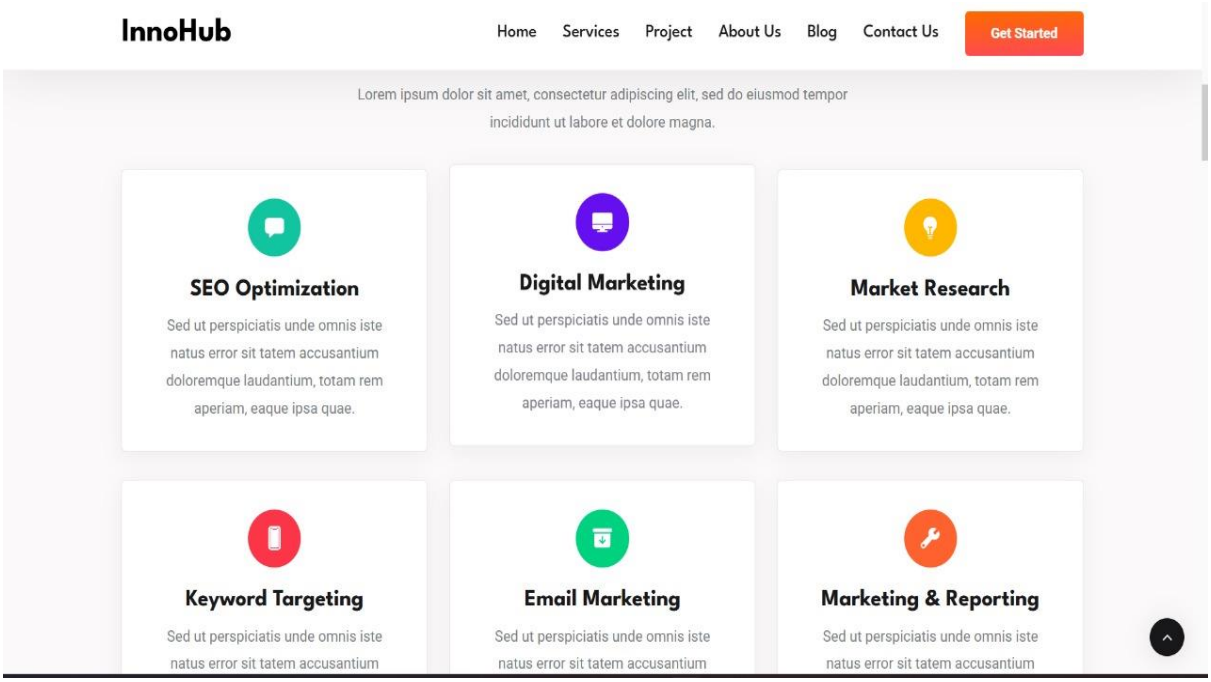
- **Frontend:** HTML, CSS, JS
- **Backend:** Python (FastAPI / Flask)
- **Blockchain:** Ethereum / Polygon / Solana
- **Smart Contracts:** Solidity / Rust
- **Database:** MongoDB / PostgreSQL
- **Storage:** IPFS
- **Tools:** VS Code, Remix IDE, MetaMask

HARDWARE SPECIFICATIONS

- Processor: Intel i5 / Ryzen 5
- RAM: 8GB minimum
- Storage: 256GB SSD
- Network: Stable internet for blockchain interaction

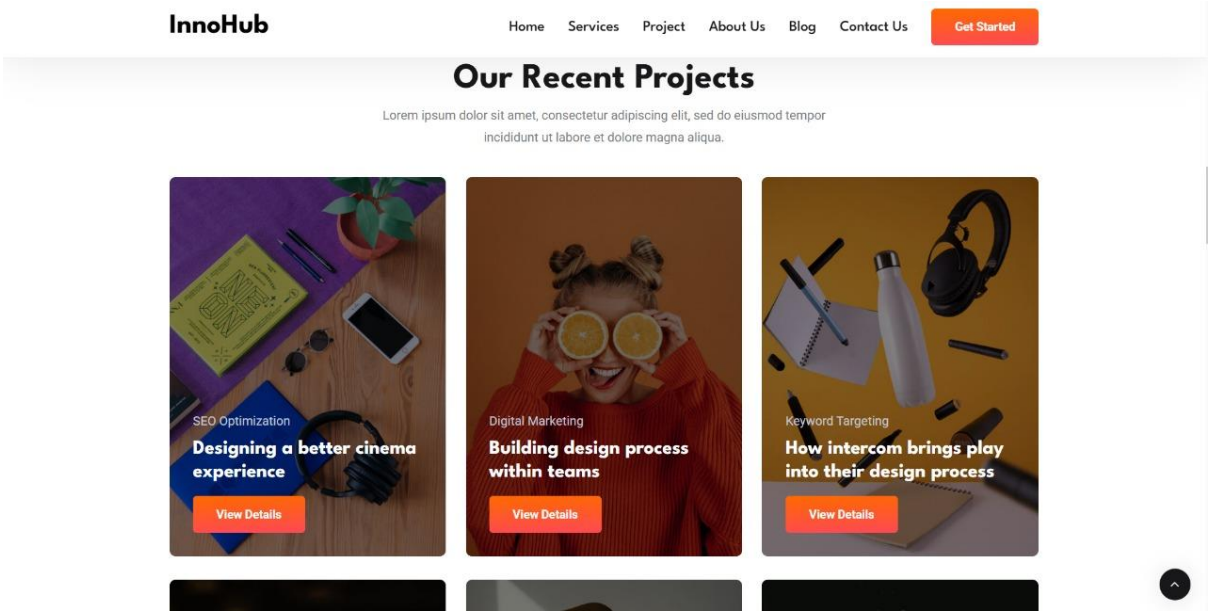
MODE OF DESCRIPTION / PROCESSING

HOMEPAGE



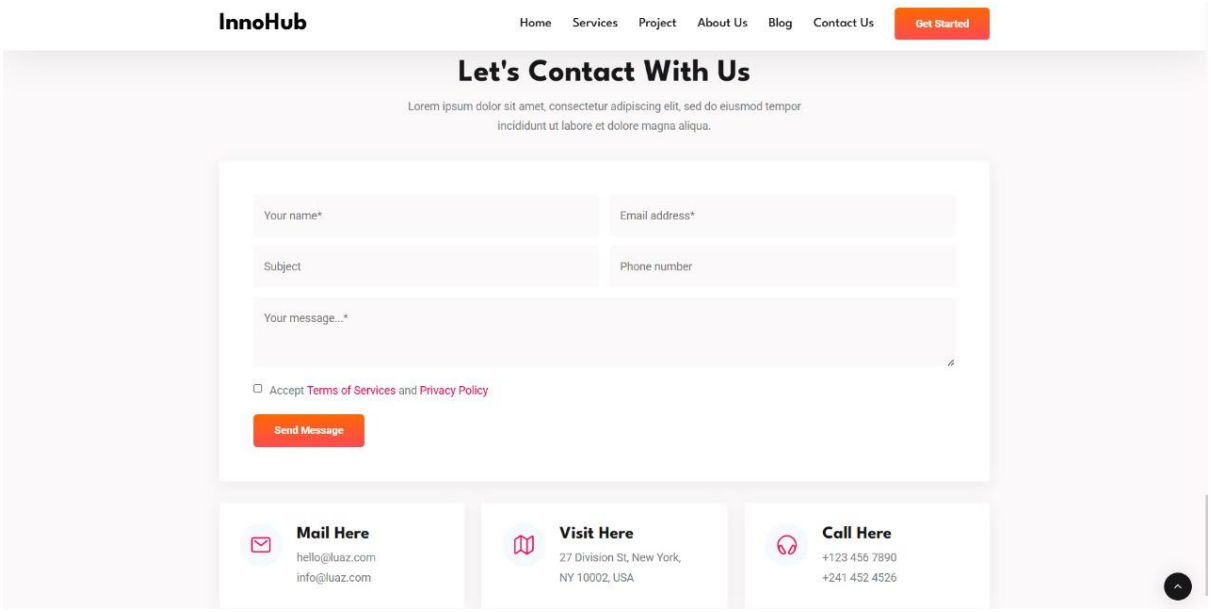
MY COLLECTIONS PAGE

Shows NFTs owned or created by the user.

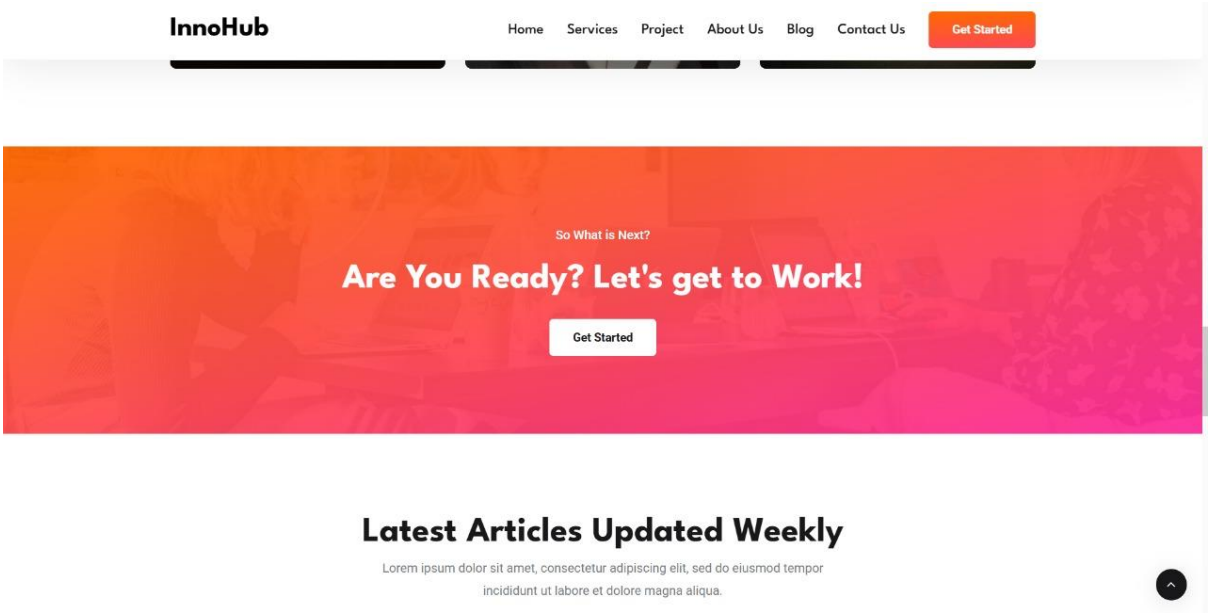


CONTACT US PAGE:

To send your messages or request to the owner.



GET STARTED PAGE:



CONCLUSION

The NFT Marketplace built using blockchain offers a decentralized, transparent, and secure platform for creators and collectors. By integrating smart contracts, wallet authentication, decentralized storage, and automated transactions, the system overcomes issues of copyright, duplication, and ownership verification. With future enhancements such as support for multi-chain integration, advanced bidding engines, VR gallery displays, and mobile applications, the marketplace can evolve into a powerful ecosystem for global digital asset trading.