

Blockchain-Based Warehouse Ownership & Maintenance Records with Prompt Engineering

The integration of blockchain technology in warehouse ownership and maintenance records ensures transparency, security, and tamper-proof data management. This system creates an immutable ledger to track warehouse ownership, lease agreements, maintenance activities, and operational records. Leveraging smart contracts, automated compliance verification, and decentralized data storage, it enhances trust between tenants, lessors, and stakeholders.

To improve accessibility, AI-driven prompt engineering is incorporated, enabling users to query blockchain-stored records using natural language. This AI-powered interface simplifies retrieving ownership history, maintenance logs, and lease agreements through intuitive chatbot interactions. Implemented using Hyperledger Fabric, Django, PostgreSQL, and AI-based NLP models (like OpenAI GPT), this approach transforms warehouse asset management into a secure, automated, and intelligent process.

System Architecture

The system consists of:

Blockchain Network: Stores warehouse ownership & maintenance records securely.

Smart Contracts: Automates ownership verification, lease transactions, and maintenance logging.

AI-Powered Prompt Interface: Uses GPT-based NLP models to interact with blockchain records.

Django Backend: Manages user authentication, API requests, and data integration.

Benefits of Blockchain & AI Integration

Tamper-Proof Records – Immutable ownership & maintenance logs.

Automated Smart Contracts – Eliminates manual lease approvals & payments.

AI-Driven Accessibility – Natural language queries simplify warehouse data retrieval.

Secure & Transparent Transactions – Blockchain ensures trustworthy ownership records.

Real-Time Maintenance Tracking – IoT-enabled logs enhance operational efficiency.

Conclusion

By combining blockchain technology and AI-driven prompt engineering, this system offers a secure, automated, and transparent approach to warehouse ownership and maintenance tracking. This innovative approach enhances trust between tenants, lessors, and warehouse administrators while simplifying lease management through natural language AI interactions.