AI based framework for smart and secure EMR management

Doctors, consumers, and others keep medical prescriptions and other information online. In this study, a blockchain-based system for storing and processing medical records is proposed. This system would use AI tools like OCR to build a single patient medical history report. This report contains only the information that is absolutely necessary, for storage on a decentralised blockchain network and simplicity of use. While the shortcomings of 4G networks are meant to be fixed by 5G networks, blockchain technology can maintain transparent and durable data records. Electronic medical record (EMR) systems might save billions of dollars a year with the use of blockchain, artificial intelligence, and 5G connections..

This Article emphasises that a systematic patient history is the most significant diagnostic factor. A survey found that over 50% of physicians considered patient history the most important diagnostic factor. Ambivalent and confusing information can lead to medication repeat and accidental neglect of crucial facts. Due to uncertain diagnosis, doctors may refuse emergency cases and redirect them to other Institutions. EMR systems improve data storage and retrieval. Unlike non-digital systems, it draws and maintains patient information digitally and can replace or supplement healthcare data storage. EMRs are growing more popular, yet they are expensive and difficult to implement. A blockchain-based medical record management system and machine learning and deep learning image analysis models have been suggested and explored. Data disclosure remains a concern for the system.

The most significant portion of this article is the suggested network model architecture, which comprises a web front-end, IPFS file storage, blockchain storage, and machine learning model processing. The argument is succinctly presented on the user-friendly front-end platform. A browser front-end, IPFS file storage, blockchain storage, and machine learning model processing make up the network model. Decentralised apps are created using the Ethereum React Truffle box. The IPFS reference (hash) is kept on the blockchain via SimpleStorage.sol.

Rescaling, shadow removal, noise reduction, and binarization are used to optimise images. The image is binarized to improve results. This study describes a 5G-based Ethereum blockchain and IPFS dApp for patient document storage and maintenance.The AI-powered Tesseract OCR Engine reads handwritten prescriptions. Microsoft Azure Computer Vision Cognitive Service API does picture OCR analysis.

To save money, blockchains store IPFS hashes. Before being processed by the AI-based Tesseract OCR, Type 1 and Type 3 documents run through a number of preprocessing filters. Photo preprocessing raises model performance by 4.698%. Decentralisation that has been optimised protects security without compromising patient privacy.