CHAPTER 2

LITERATURE SURVEY

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The literature survey for the “AI-Powered Crypto Price Prediction and Blockchain Wallet Transactions" highlights the use of AI models, such as deep learning, for predicting cryptocurrency prices with improved accuracy. Blockchain technology, particularly smart contracts, has been widely applied for securing transactions. However, there is limited research combining AI-driven price prediction with blockchain for secure wallet transactions, indicating a gap that this project aims to fill.

2.1 OVERVIEW

The project "AI-Powered Crypto Price Prediction and Blockchain Wallet Transactions" aims to develop a platform that integrates AI for accurate cryptocurrency price predictions and blockchain technology for secure wallet transactions. By leveraging deep learning models like transformers and CNNs, the system predicts future cryptocurrency prices based on historical market data. It also incorporates real-time price updates through API calls. For secure transactions, the platform uses blockchain and smart contracts to ensure transparency and security in wallet-to-wallet transfers. The goal is to provide a reliable, user-friendly, and efficient solution for cryptocurrency trading and transactions.

2.2 LITERATURE SURVEY

- The paper *"A Cryptocurrency Price Prediction Model using Deep Learning"* by Akila V, Nitin M. V. S, Prasanth I, Sandeep Reddy M, and Akash Kumar G presents a machine learning approach for cryptocurrency price prediction. The paper discusses two key components: the effects of CPD (Cryptocurrency Price Data) and the attention mechanism, which are incorporated into the proposed SAM-LSTM (Self-Attention Mechanism Long Short-Term Memory) model. These components are first validated through their application in predicting univariate Bitcoin (BTC) prices. After confirming the effectiveness of these techniques, the paper proceeds to evaluate the overall price prediction performance of the SAM-LSTM model. The validation of these techniques demonstrates the model's potential in improving the accuracy of cryptocurrency price predictions.
- The paper " Enhancing Price Prediction in Cryptocurrency Using Transformer Neural Network and Technical Indicators" by Mohammad Ali Labbaf Khaniki, Mohammad proposes an innovative cryptocurrency price prediction model that combines three key

elements: technical trading indicators, a Performer neural network architecture, and BiLSTM (Bidirectional Long Short-Term Memory). The approach leverages technical indicators like RSI and SMA to identify market patterns, while utilizing the Performer network's FAVOR+ mechanism for efficient computation. The addition of BiLSTM enables better capture of temporal relationships through bidirectional data processing. This hybrid model shows promise for predicting price movements of major cryptocurrencies including Bitcoin, Ethereum, and Litecoin, with planned improvements to incorporate sentiment analysis and other external data sources in future iterations.

- The paper titled " ETHEREUM TRANSACTION USING METAMASK WALLET" authored by Dr. Kumud Saxena, Vaibhav Kushwaha, Umang Gupta, Vanshika Saxena Shweta Srivastava proposes idea which aims to enhance the security, efficiency, and transparency of Ethereum transactions by leveraging blockchain technology and smart contracts. MetaMask serves as a cryptocurrency wallet that allows users to interact with the Ethereum blockchain, facilitating transactions and managing account keys. The application provides a user-friendly interface for sending transactions, with features like gas estimation and transaction tracking through Etherscan.io. The ultimate goal is to promote financial inclusivity, streamline business transactions, and contribute to the advancement of decentralized Web3.0 technologies.
- The paper titled " Open Data and APIs-data extraction and exploration using python" was authored by Dr. Shamprasad M. Pujar,Dr. Satish S. Munnolli, Dr. Rajendra Babu H explores the role of open data and APIs in data extraction and exploration, highlighting their importance in enhancing data accessibility, transparency, and research collaboration. It emphasizes the growing momentum of the open data movement and the potential of APIs as tools for retrieving, analyzing, and managing open datasets. Using Python, the study demonstrates how libraries can leverage APIs, such as the World Bank Global API, for efficient data extraction and visualization. It advocates for libraries to adopt technological skills like coding to better manage open data, emphasizing their evolving role in a data-driven world.
- The paper "Speech Characteristics of Patients with Parkinson's Disease—Does Dopaminergic Medications Have a Role?" by Valiyaparambath Purushothaman Vandana, Jeevendra Kumar Darshini, Venkappayah Holla Vikram, Kamble Nitish, Pramod Kumar Pal, and Yadav Ravi investigates the effects of dopaminergic medication on voice, speech, and motor functions in Parkinson's patients. The study utilized statistical methods such as

the Wilcoxon signed-rank test and Spearman's correlation to analyze relationships between motor and speech parameters but did not employ machine learning models. Acoustic analysis was performed using the Multi-Dimensional Voice Program (MDVP).

2.3 APPROACH TO THE PROBLEM

To approach the cryptocurrency price prediction problem using a SAM-LSTM model with CPD and the attention mechanism, the process begins with gathering historical cryptocurrency data, such as Bitcoin prices, from reliable sources like CoinGecko or Binance. The data is then preprocessed by handling missing values, removing outliers, and normalizing features like price, volume, and technical indicators (e.g., moving averages and RSI). The processed data is split into training and testing sets while ensuring the temporal nature of the data is respected. The core model is built using Long Short-Term Memory (LSTM) layers to capture sequential dependencies in the data, while the attention mechanism is integrated to allow the model to focus on significant past time steps that influence price movements. The Self-Attention Mechanism Long Short-Term Memory (SAM-LSTM) model is then trained using the processed data, with loss functions like Mean Squared Error (MSE) and optimizers such as Adam. Early stopping is used to prevent overfitting, ensuring that the model generalizes well to new data. The model's performance is validated using evaluation metrics like RMSE, MAE, and R^2 score, comparing its accuracy against simpler models like ARIMA. Hyperparameters such as the number of LSTM units, learning rate, and attention mechanism configuration are tuned to improve performance. The model is then tested on unseen data to ensure robustness and to evaluate its real-world prediction capabilities. Future work could involve integrating external sentiment analysis data, expanding the model to predict prices for multiple cryptocurrencies, and deploying the model in real-time environments for actionable predictions.

2.4 SUMMARY

The literature survey highlights the use of LSTM models for cryptocurrency price prediction, with attention mechanisms enhancing accuracy by focusing on key time steps. Previous studies also emphasize the role of technical indicators and market sentiment in improving predictions, which this project builds on by combining SAM-LSTM with Cryptocurrency Price Data (CPD) for better forecasting.

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