Abstract

The cryptocurrency market is characterized by high volatility and unpredictable price movements, making accurate price forecasting a challenging task. This project aims to predict the next-day closing prices of major cryptocurrencies using a combination of machine learning and deep learning models, including K-Nearest Neighbors (KNN), Support Vector Machine (SVM), Multi-Layer Perceptron (MLP), and Convolutional Neural Network (CNN). The dataset includes historical features such as High, Low, Open, Close, Volume, and Marketcap from cryptocurrencies like Bitcoin, Ethereum, Tron, Ripple, and Tether. Data preprocessing techniques, including normalization using MinMaxScaler, were employed to standardize the input features. The models were trained using a 70:30 split for training and testing. The MLP and CNN models incorporate multiple layers with optimized hyperparameters to capture complex patterns in the data. Model performance is evaluated using the Root Mean Squared Error (RMSE) metric. The results demonstrate the potential of deep learning models, particularly CNN, in achieving better predictive accuracy compared to traditional machine learning approaches like KNN and SVM.

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