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Cryptocurrencies Prices Prediction Using Sentiment Analysis

Group 1

INTRODUCTION

This is the era of online banking and cryptocurrency. Soon, many countries will accredit cryptocurrencies as their official way of trading. More and more investors are investing in cryptocurrencies but many of them neither know how to analyze them nor make the right decisions so they follow many professionals on social media or read the news and follow their instructions. This project aims to help investors to predict the cryptocurrency price by making good use of Sentiment Analysis over social media and news data with Machine Learning to predict the prices.

PROBLEM STATEMENT

Periodically change in the cryptocurrency price makes it difficult to make the right decision to know whether to sell or buy. It requires a lot of time and effort to learn how to analyze and do the analysis itself so that the investors could predict the price and make the best decision.

OBJECTIVES

It's shown that there's a correlation between social media (Twitter) and cryptocurrency prices, and using Sentiment Analyses will help people to make better-Informed purchase and selling decisions.

BACKGROUND & LITERATURE REVIEW

Sentiment analysis is the science that is concerned with processing text data using computational and mathematical models to extract the emotional meaning of the text. Sentiment analysis Is used by many multinational companies to help them to understand the social sentiment about their products and services. But can we use sentiment analysis to predict Cryptocurrency prices and help users to make better decisions? As we will see in the next papers researchers have tried different techniques to make models that can predict Cryptocurrency prices accurately and efficiently.

As is shown in [1] the authors used different models like Naive Bayes, Logistic Regression, Support Vector Machines, and Random Forest, and they compared between model's results also, Implementing a Long short-term memory recurrent neural network (LSTM) and a Multi-Layer Perceptron (MLP).

	Bitcointalk			Reddit			CryptoCompare		
	TS-LDA	JST	LDA + V	TS-LDA	JST	LDA + V	TS-LDA	JST	LDA + V
LR	0.50	0.49	0.50	0.49	0.51	0.50	0.51	0.50	0.50
RF	0.51	0.50	0.52	0.49	0.49	0.48	0.51	0.49	0.50
XGB	0.52	0.52	0.52	0.51	0.51	0.51	0.52	0.52	0.52
NB	0.51	0.51	0.51	0.49	0.49	0.49	0.51	0.51	0.51
MLP	**0.53**	0.52	**0.54**	**0.54**	**0.53**	0.52	**0.55**	0.55	0.53
SVM	0.51	0.52	0.52	0.51	0.51	0.51	0.51	0.50	0.50
LSTM	0.52	0.54	**0.55**	0.50	0.51	0.51	0.52	0.52	0.53

The maximum across all tested configurations of the number of topics/number of sentiment labels is given. The best result per dataset (before rounding) is highlighted in bold

Figure[1]

Authors In [2] proposed LTSM based sentiment analysis model. they used long short-term memory (LSTM) along with the historical cryptocurrency prices to predict the price trend for the future. The results yielded an 87 percent accuracy rate.

As shown above, researchers used different techniques and obtained different results. but of course, Improving accuracy Is still the main objective. so, as the accuracy Is our main goal, we thought that if we use an AutoMl tool like Google Brain AutoML or auto-sklearn with LSTM layer for sentiment analysis we think that we could obtain good accuracy, also we will Implement different models like logistic regression, Naive Bayes, Support Vector Machines, and Random Forest. and we will compare between each of these models results and AutoML results.

METHODOLOGY

Predicting cryptocurrency price movements is a well-known problem of interest and we need to develop a solution that can predict the price movements of a cryptocurrency based on the sentiment of the input provided. We will collect the dataset from different resources like Twitter, Reddit, and some other social medial platforms. These text-based data will be combined with historical data on cryptocurrency prices to help us train our model by feeding these data Into It, and then using It to generate an accurate prediction to help users to make better decisions. We will try to accomplish this by analyzing the sentiment on social media using Long short-term memory recurrent neural network (LSTM), and for the ML model, we will use Google Brain AutoML and auto-sklearn and compare their results with the other models that we will Implement.

REFERENCES

[1] Ekaterina Loginova, Wai Kit Tsang, Guus van Heijningen, Louis-Philippe Kerkhove and Dries F.Benoit. (2021). Forecasting directional bitcoin price returns using aspect-based sentiment analysis on online text data.
[2] Xin Huang, Wenbin Zhang, Yiyi Huang, Xuejiao Tang, Mingli Zhang, Jayachander Surbiryala, Vasileios Iosifidis, Zhen Liu, and Ji Zhang. (2021). LSTM Based Sentiment Analysis for Cryptocurrency Prediction.