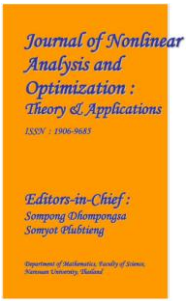
Journal of **N**onlinear **A**nalysis and **O**ptimization
Vol. 13, Issue. 2 : 2022
ISSN : **1906-9685**



ANALYZE AND FORECAST CRYPTOCURRENCY PRICES USING MACHINE LEARNING ALGORITHMS.

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ABSTRACT
Here, we put forth a prediction method for crypto currency prices that takes into account a number of factors that influence their values. Using the three algorithms—KNN (k- closest neighbours), decision tree, and nave bayes—we will compare and forecast the values for three major crypto currencies, including Bitcoin, Ethereum, and Dogecoin. In the initial stages of the research, we seek to comprehend and identify everyday trends in the markets for Bitcoin, Ethereum, and Dogecoin. Using the facts at our disposal, we will make the most accurate prediction of the daily price change in the second stage of our research.

Keywords:
Bitcoin, Bitcoin prediction,Cryptocurrency, KNN, SVM, machinelearning.

INTRODUCTION
Cryptocurrency research is one of the hot topics right now, according to academics. Numerous academics may examine the characteristics of cryptocurrencies in a variety of methods, including market price forecasting, the influence of cryptocurrencies on daily life, and more. In this essay, we concentrate on predicting the market price of a variety of cryptocurrencies using their historical pattern. In our research, we looked at aspects of the bitcoin market connected to pricing in an effort to comprehend and detect daily patterns. Our dataset includes more than nine characteristics related to the daily bitcoin price data collected over a six-month period. For the purpose of forecasting the daily change in cryptocurrency prices, we used various machine learning algorithms. Various cryptocurrencies include Bitcoin, Ethereum, Dogecoin, and others.

Bitcoin
Bitcoin is a crypto currency which is used worldwide for digital payment or simply for investment purposes. Bitcoin is decentralized i.e. it is not owned by anyone. Transactions made by Bitcoins are easy as they are not tied to any country. Investment can be done through various marketplaces known as “bitcoin exchanges”. These allow people to sell/buy Bitcoins using different currencies.The largest Bitcoin exchange is Mt Gox. Bitcoins are stored in a digital wallet which is basically like a virtual bank account. The record of all the transactions, the timestamp data is stored in a place called Blockchain. Each record in a blockchain is called a block. Each block contains a pointer to a previous block of data. The data on blockchain is encrypted. During transactions the user’s name is not revealed, but only their wallet ID is made public.

http://doi.org/10.36893/JNAO.2022.V13I2.1874-1880

Prediction

The Bitcoin's value varies just like a stock albeit differently. There are a number of algorithms used on stock market data for price prediction. However,the parameters affecting Bitcoin are different. Therefore it is necessary topredict the value of Bitcoin so that correct investment decisions can be made. The price of Bitcoin does not depend on the business events or intervening governmentunlike stock market. Thus, to predict the value we feel it is necessary to leverage machine learning technology to predict theprice of Bitcoin.

LITERATURE REVIEW

The exponential growth of Internet access has triggered new technologies andtechniques in real life. Cryptocurrency is one of the emerging Internets technology uses as currency over the traditional monetary system. The term cryptocurrencymeans the digital currency or the virtual currency, which is works as a mode ofexchange or transfer of assets digitally. The market of cryptocurrency has evolved at an exponential speed in a short span of time. The first cryptocurrency was introduced in 2009 named as Bitcoin by Satoshi Nakamoto. Later on, there are thousands of other cryptocurrencies are running in the market. Unlike centralized banking system and electronic money, cryptocurrencies follow the decentralized system, which means it supports blockchain transactional databases. The centralized banking system means there is the hierarchy of network exist and government controls the overall currency system, on the other hand, there is no hold of government or any other agency exists on cryptocurrencies.

Digital coins or cryptocurrencies are named so due to the use of encryption techniques in regulating transfers creation of coins. It is essential to understand the social and financial factors that determine the price of a bitcoin so that we can understand its impact on the economy of a nation. Bitcoin as well as other cryptocurrencies have not gone down well with governments due to avoidance of financial systems and increasedimpossibility to allow cash movements andfight against activities that are not legal. These include the decision of Chinese government to get rid of Bitcoins in 2013, the bankruptcy of Mt. Gox which is one of the heads of Bitcoin trading and gain legitimacy after Brexit vote. These and many other issues have led to the need of studying about digital currencies intensely.In this paper, we are predicting daily price changes for multiple cryptocurrencies. A few of them are bitcoin, ripple, NMC and so on. We propose an approach for theprice prediction using one of the famous machine learning algorithms, i.e.,multivariate linear regression. Our plan starts with data pre-processing, in whichwe clean up the dataset by removing rows with the missing value. Next, we examine the independent features in the dataset, which help us in predicting the highest price of the cryptocurrency. Next, we find out the correlation between dependent and independent variables, and at last, we can predict the costs.

PREDICTION TECHNIQUES

A. K-Nearest Neighbor:

It very well may be utilized for both order and relapse issues. Be that as it may, it is all the more generally utilized in characterization issues in the business. K nearest neighbors is a straight forward calculation that stores every single accessible case and arranges new cases by a lion's share vote of its k neighbors. The case being allotted to the class is generally normal among its K closest neighbors estimated by a separation work. These separation capacities can be Euclidean, Manhattan, Minkowski and Hamming separation. Initial three capacities are utilized for constant capacity and fourthone (Hamming) for clear cut factors. On the off chance that K = 1, at that point the case is basically relegated to the class of its closest neighbor. Now and again, picking K ends up being a test while performing kNN displaying.

B. SVM Algorithm:

In the program we will use the Support Vector Regression function which is a typeof Support Vector Machine. A Support Vector Regression (SVR**)** is a type of supervised learning algorithm that analyzes data for regression analysis. In1996, this version of SVM for regression was proposed by Christopher J. C. Burges,Vladimir N. Vapnik, Harris Drucker, Alexander J. Smola and Linda Kaufman. The model

produced by SVR depends onlyon a subset of the training data, becausethe cost function for building the model ignores any training data close to the model prediction. It is effective in highdimensional spaces. It works well with clear margin of separation. It is effective in cases where number of dimensions is greater than the number of samples.

SYSTEM DESIGN

UML stands for Unified Modeling Language and is an acronym that identifies the same. In essence, UML is a way to create models and documentation for software. One of the most common business process modelling techniques is now in use. Diagrammatic depictions ofsoftware components are at the core of it. "A picture is worth a thousand words,"like the saying goes. Using visualrepresentations helps us better comprehendpossible errors or problems in business processes or software.

Because of the confusing nature of software design and documentation, UML was invented. For software systems, there were a variety of techniques in the 1990s. A more unified way to visually represent those systems arose, and as a result, three software engineers at Rational Software developed the UML during 1994-1996. It was accepted as the standard in 1997, andit has since received only a few minor updates, remaining as the standard.

use case diagram:

In Unified Modeling Language (UML) terms, a use case diagram is a type of behavioural diagram that starts with a use case analysis. Its goal is to describe the functionality of a system in terms of actors, goals, and dependencies using a visual representation. The use case diagram serves two purposes: It reveals which actor is the primary user of the system, and which system features they rely on. There are ways to illustrate the actors roles in the system.

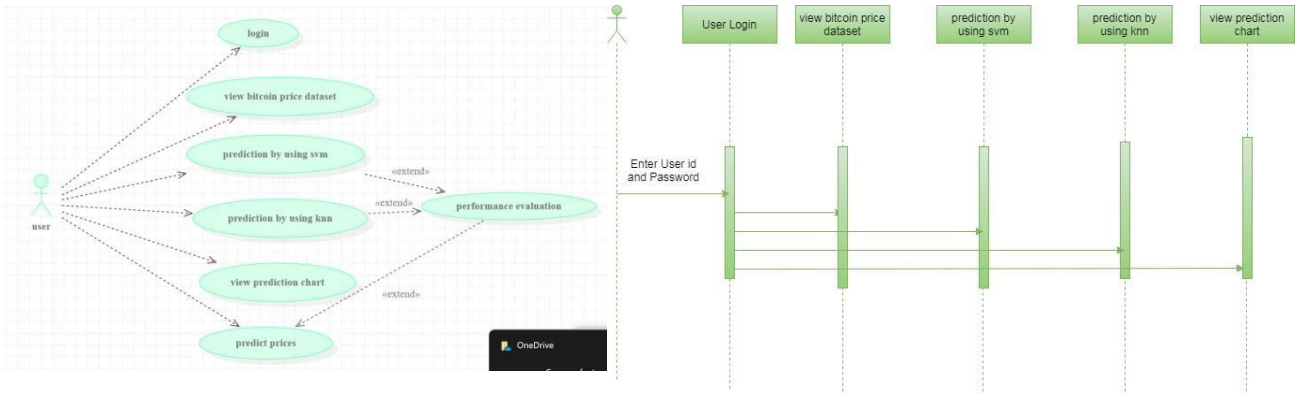

Fig.1. User case

Class Diagram

In software engineering, a class diagram inthe Unified Modeling Language is a typeof static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations, and the relationships among objects.

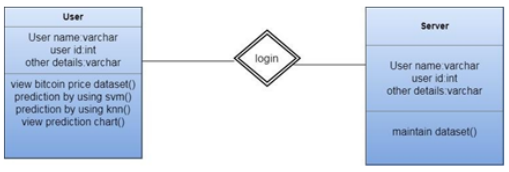

Fig.2. Class diagram

Sequence Diagram

A sequence diagram or system sequence diagram shows process interactionsarranged in time sequence in the field of software engineering. It depicts theprocesses involved and the sequence of messages exchanged between theprocesses needed to carry out the functionality.

Activity Diagram

Activity diagram is another importantdiagram in UML to describe the dynamic aspects of the system.

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Activity diagram is basically a flowchart to represent the flow from one activity to another activity. The activity can be described as an operation ofthe system.

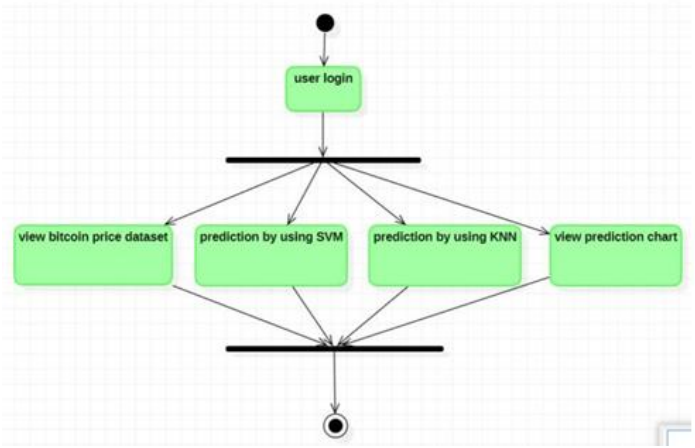
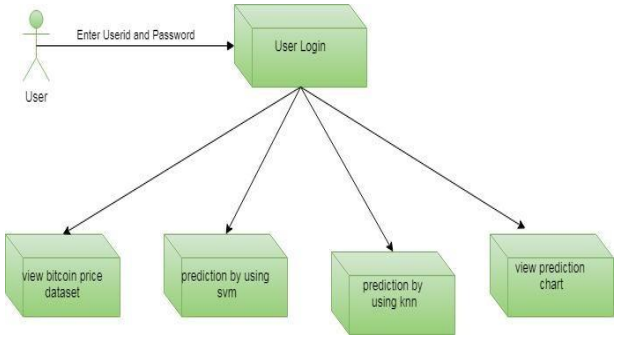


Fig.3. Activity Diagram

Component Diagram

In Unified Modeling Language, a component diagram depicts how components are wired together to form larger components or software systems. They are used to illustrate the structure of arbitrarily complex systems.



Data Flow Diagram:

A data flow diagram (DFD) maps out the flow of information for any process or system. It uses defined symbols like rectangles, circles and arrows, plus short text labels, to show data inputs, outputs, storage points and the routes between eachdestination.

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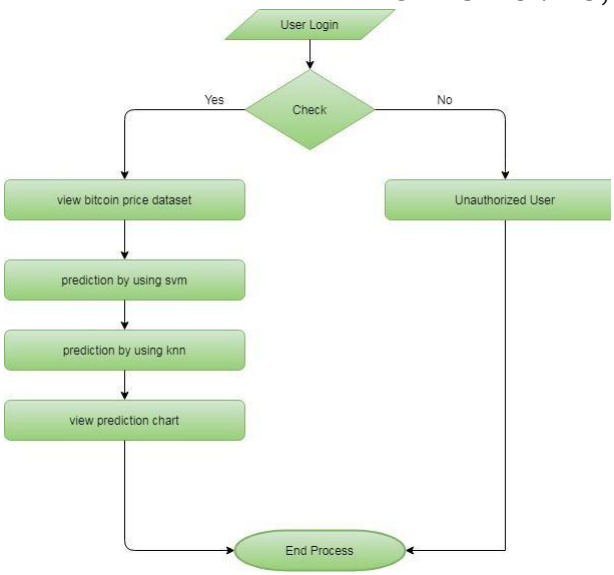
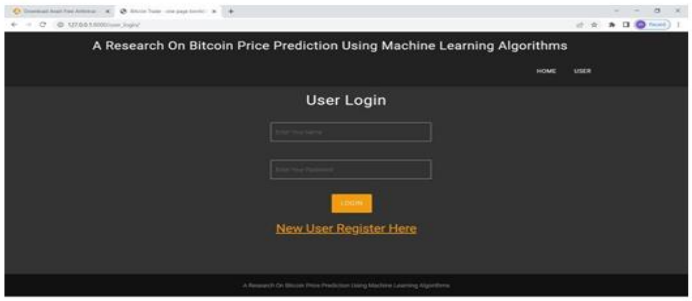
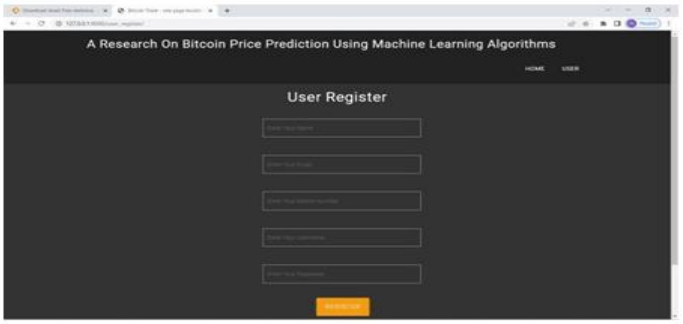


Results

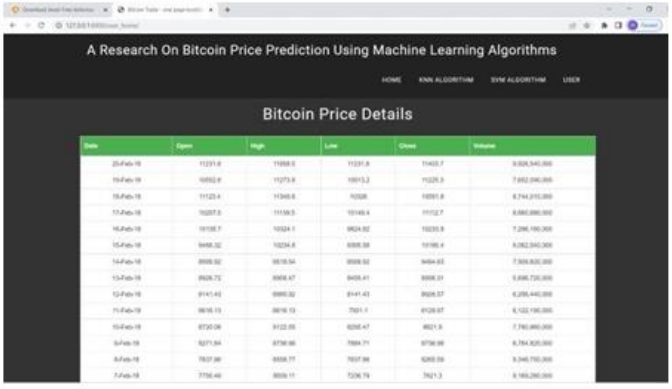
Home page



user login



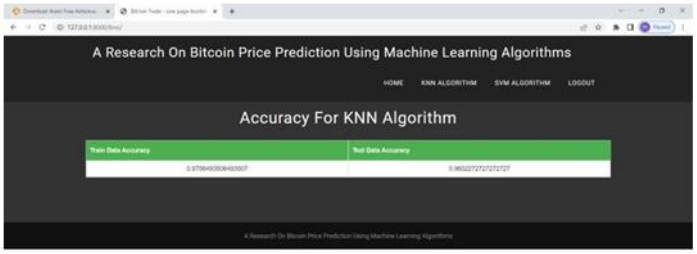
user registration



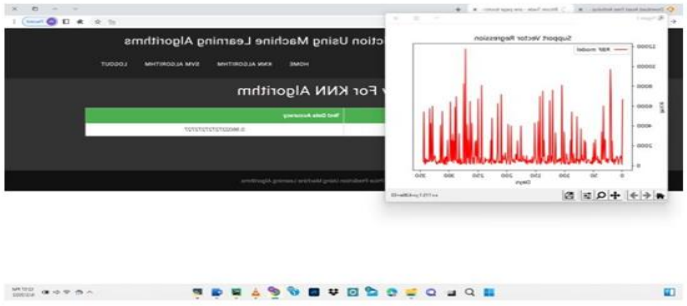
bitcoin price prediction

http://doi.org/10.36893/JNAO.2022.V13I2.1874-1880

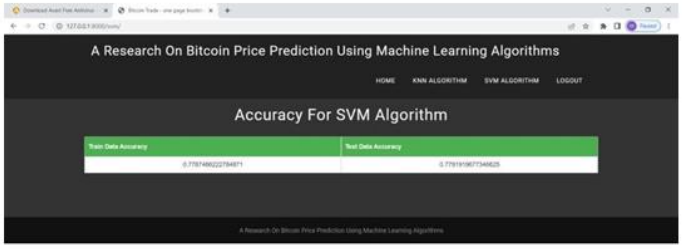
Bitcoin price visualization



KNN accuracy



Support Vector Regression



SVM Accuracy

CONCLUSION

Using KNN and SVM machine learning algorithms, we forecast the price of the Bitcoin cryptocurrency. The future concept of cryptocurrency will be improved by machine learning algorithms. This will raise the market value of international assets. In this research, we suggested two algorithms for determining pricing correctness in the future. That promotes client growth and profitability.

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