# CRYPTOCURRENCY PRICE ANALYSIS WITH DEEP LEARNING

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## ABSTRACT

Digital money has of late ignited far-reaching consideration among financial backers in light of the fact that to its hidden idea of decentralization and straightforwardness. Given digital money's instability and recognizing highlights, exact value expectation is basic for laying out powerful financial planning methodologies. To that reason, the creators of this paper present a special strategy for foreseeing the cost of Bitcoin (BTC), a main digital money. The change point identification approach is utilized to give consistent forecast execution in an unseen cost range. It is especially helpful for fragmenting time-series information so standardization might be performed separately founded on division. Besides, on-chain information, or exceptional records posted on the blockchain that are characteristic in digital currencies, is accumulated and utilized as info factors to expect values. Also, for the expectation model, this paper presents self-consideration based numerous long short-term memory (SAM-LSTM), which includes different LSTM modules for on-chain variable gatherings and the consideration instrument. Tests utilizing genuine BTC cost information and different procedure settings have shown that the proposed structure is viable at anticipating BTC costs. Results are positive, with the best MAE, RMSE, MSE, and MAPE upsides of 0.3462, 0.5035, 0.2536, and 1.3251, individually.

**Keywords:**CNN,RNN,ANN,GRU,LSTM

## 1. INTRODUCTION

The presentation of blockchain innovation has brought about significant changes to the construction of cash and exchanges. From its beginning to the present, money's essential capability has been for installment and mode of significant worth appropriation. This capability is reliant upon confidence in the money, which is ensured and kept up with by a focal power (e.g., government, bank). In any case, focal specialists have a huge blemish: there is the chance of debasement, which could risk exchange steadfastness. The blockchain, an open, hostile to duplicating, and carefully designed record, has created a cash known as digital forms of money. In view of blockchain innovation, bitcoin might be relied upon without the confirmation of a focal power, breaking liberated from the regular association. Cryptographic money that guarantees decentralization and straightforwardness opens the capability of a financial framework that decreases the risk of misrepresentation and safeguards protection [2]. Bitcoin (BTC), the significant cryptographic money, stands separated from current conventional monetary forms. BTC supply is covered to 21 million units, bringing about basically no expansion initiated by a focal government's money printing [3]. This reinforces the meaning of decentralization, permitting bitcoin to act as an installment system as well as for of putting away worth. As a matter of fact, notwithstanding customary speculation vehicles, putting resources into digital currencies is as of now viewed as one of the best techniques to raise resource esteem.

## 2. EXISTING SYSTEM

Recently, due to their ability to model non-stationarity in time-series data (unlike traditional approaches), machine learning methods have been widely used in predicting prices for financial products. However, this work has found that there exist two issues in the literature. The first issue is due to a recent upsurge and plummet in cryptocurrency prices. Since the price moves in an unexpected range that has been previously unseen, constructed machine learning-based models are not able to predict future prices accurately. This problem does not apply only to certain prediction algorithms but could affect practically every prediction model constructed based on price data within a moderate range. This work therefore proposes a novel method to address the aforementioned problem using a change point detection (CPD) technique. In particular, during training, input data are segmented with CPD so that each segmented data has its own statistical characteristics. Based on segmentations, data are normalized separately to effectively reflect severe fluctuations. This has proven to be a practical solution to the first issue by the experiments in this work. The second issue that this work addresses for improvement of the cryptocurrency price prediction literature is that many existing works utilize only trite variables, such as historical prices and social media data.

**Disadvantages of the existing system:**

- Due to a recent upsurge and plummet in cryptocurrency prices:
- Many existing works utilize only trite variables, such as historical prices and social media data.

## 3. PROPOSED SYSTEM

Our proposed system harnesses the power of three advanced deep learning techniques: Convolutional Neural Networks (CNN), Long short term memory(LSTM), and Recurrent Neural Networks (RNN) for the purpose of on-screen activity classification. This ensemble of methods brings a multi-faceted approach to the task, ensuring accurate and comprehensive. This work suggests using extensive blockchain-associated variables to enhance the ability of price prediction approaches. The proposed framework uses on-chain data, which are the most important factors for cryptocurrency price prediction, as independent variables. Considering cryptocurrency's volatility and unique characteristics, accurate price prediction is essential for developing successful investment strategies. To this end, the authors of this work propose a novel framework that predicts the price of Bitcoin (BTC), a dominant cryptocurrency. For stable prediction performance in unseen price range, the change point detection technique is employed. In particular, it is used to segment time-series data so that normalization can be separately conducted based on segmentation. In addition, on-chain data, the unique records listed on the blockchain that are inherent in cryptocurrencies, are collected and utilized as input variables to predict prices. Furthermore, this work proposes self-attention-based multiple long short-term memory (SAM-LSTM), which consists of multiple LSTM modules for on-chain variable groups and the attention mechanism, for the prediction model.
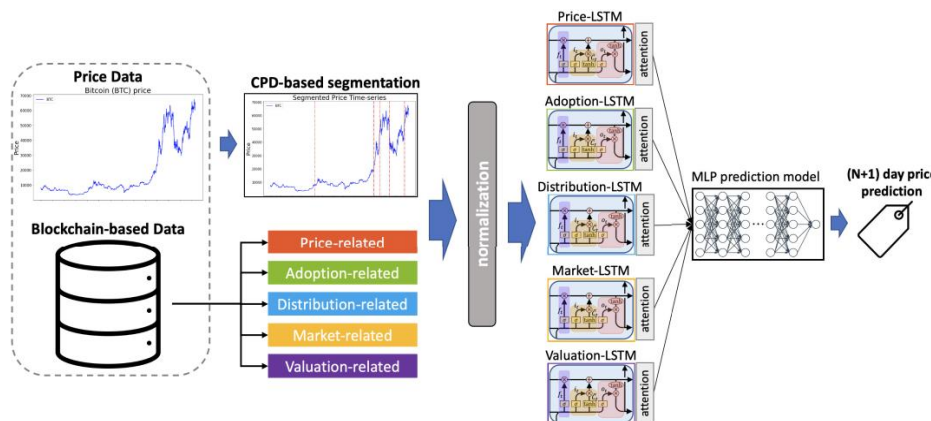
## 4. WORKING PRINCIPLE



**Fig 1:** Work Flow

**Advantages of the Proposed System:**

- The efficiency of the suggested BTC price prediction mechanism.

    Extensive trials confirm the efficiency of CPD and SAM-LSTM in BTC price prediction.

## 5. RESULTS

Data need to be pre-processed according to the models it helps to increase the accuracy of the model and better information about the data.
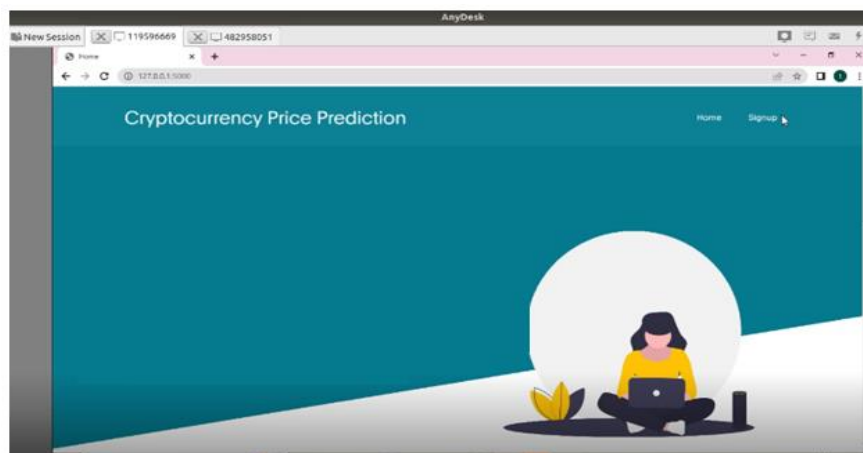


**Fig 2:** Home Page

- Click the chrome website or any other websistes and enter the address 127.0.0.1.5000 in search bar and click the enter button we will directly go to the cryptocurrency price prediction page.
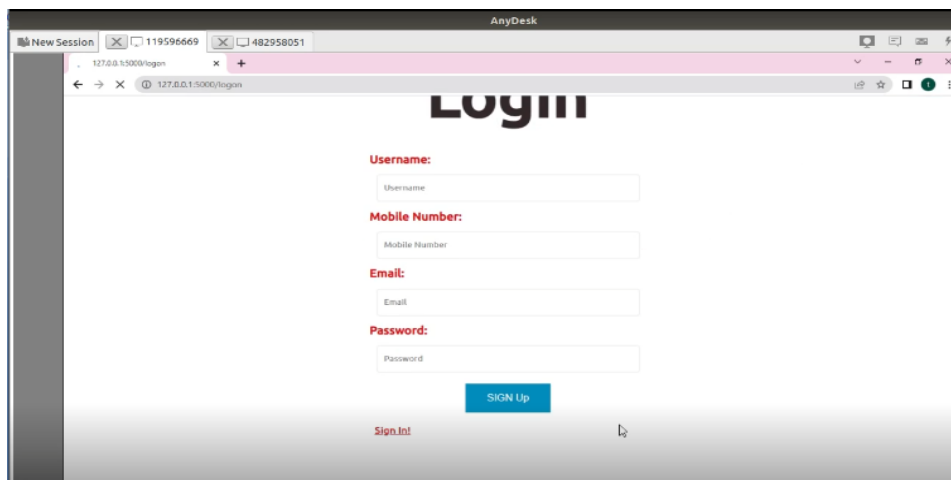


**Fig 3:** Registration Page

- Click on the signup in the right corner of the home page and enter the all details after that click the signup.

- If newly registration this page enter the all details otherwise already you have registered this page then go to signin.



**Fig 4:** Login Page

- If you already have a registration account then directly login the page with your username and password.
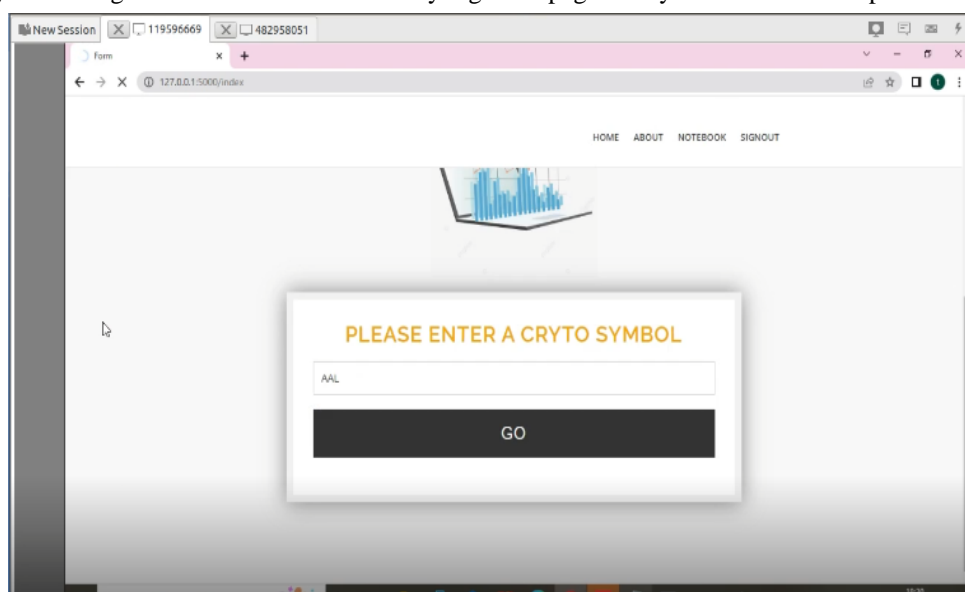


**Fig 5:** Enter a Crypto Symbol

- Enter the any one cryptocurrency symbols like BTC(Bitcoin),USD(US Doller),ETC(Etherium coin), LTC(Lite coin) etc… and then click the Go button.
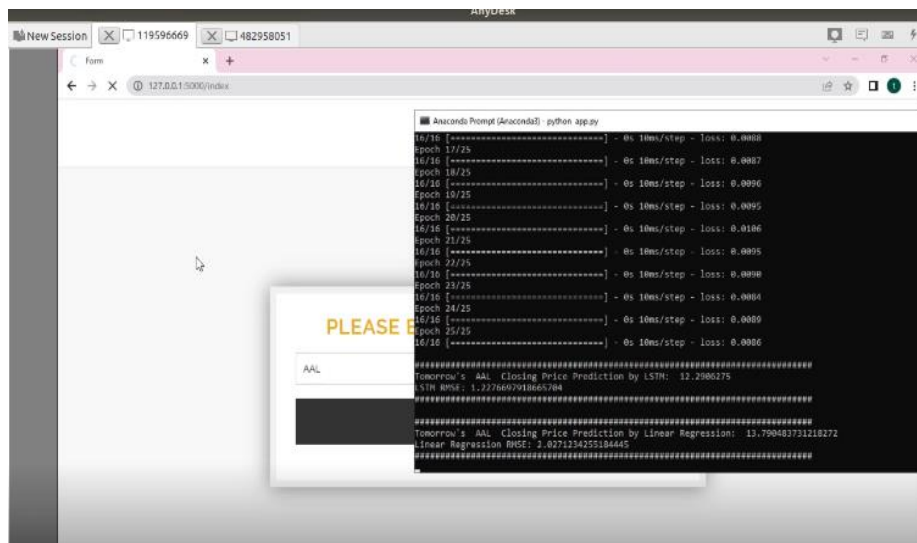


**Fig 6:** Output Screen

- After you enter the cryptocurrency symbol, you will get the price predictions analysis in Anaconda prompt.
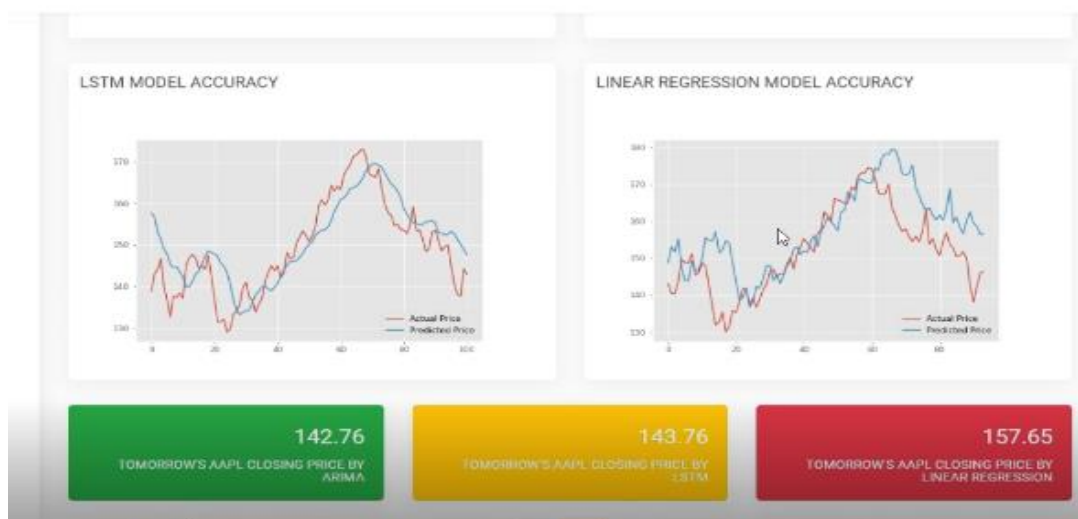


**Fig 7:** Prediction Graph

- It shows the future analysis of cryptocurrency prices in a graphical method.

## 6. CONCLUSION

The creators present an extraordinary strategy for foreseeing digital currency values in view of multivariate on-chain time-series information. BTC value forecast is completed utilizing the proposed technique. Unlike regular AI based models, a CPD-based normalizing approach permits cost expectation models to estimate beforehand obscure cost ranges. Different on-chain factors are picked, grouped in view of their characteristic elements, and used as information factors for cost expectation. The proposed cost forecast model (SAMLSTM), which is comprised of a few LSTM modules with various consideration instruments and a MLP-based collection module, removes exceptional highlights from totaled on-chain information. This work comprises of five significant stages. Third, time-series information are sectioned and standardized inside each fragment utilizing a CPD approach known as PELT. Fourth, SAM-LSTM, which utilizes numerous LSTM for different on-chain variable gatherings and a consideration technique for cost expectation, is presented. Finally, thorough tests are utilized to approve the helpfulness of CPD and SAM-LSTM in anticipating BTC costs. One drawback of this study is the absence of a presentation correlation with existing bitcoin cost forecast frameworks. There are different justifications for why examination tests can't be led. In the first place, every work in the writing utilizes unmistakable information as far as time frames, input information types (e.g., virtual entertainment information, Google Patterns), preprocessing processes, etc. Existing strategies, specifically, that utilization cost information preceding the most recent drop are not ensured to deliver similar gauge results.

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