Cryptocase-Diversified Investment Platform for High Returns

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Abstract:- Crypto case is a diversified investment platform based on idea or a theme for cryptocurrency. Decentralized Finance has opened a new investment world in cryptocurrency. Cryto case works by splitting the total amount that is put into the platform into different projects or cryptocoins. These basket of coins are created by professionals who are always montitoring new DEFI projects. Machine learning algorithms helps to rebalance portfolio as it predicts an estimated returns along with that our app helps to fetch tweets from twitter and do sentimental analysis on the tweets fetched.

Index Terms:- Machine learning, Diversified investment strate- gies, re balancing, high returns , Decentralized Finance

I. INTRODUCTION

In recent years, the remarkable rise in Bitcoin and other cryptocurrencies has drawn a lot of attention. Because of recent developments in their underlying technology, cryptocurrency markets have gotten a lot of attention, and investors see it as an alternative investment option. Cryptocurrency markets are becoming a more prominent asset class for both scholars and traders as the investment community pays more attention to them.

Cryptocase offers a cryptocurrency basket with a predeter- mined weighting scheme that reflects a specific goal (ideas, themes, strategies).To some extent, diversification can consider-
ably minimise the risk factor[3].In two clicks, you may purchase a cryptocase.Anyone with a cryptocase account can use the payment gateway to make a payment to a specific basket creator. You can invest in this cryptocase by clicking on "Baskets" in the crypto-case profile and logging with your account creden- tials.Then provide user with investment strategies which can create wealth for Investors through investing in markets for an investment horizon of over one year or more.Use of Machine Learning helps to get a clear picture of projects and weights of them in basket[1].

II. RELATED WORKS

Binance and Wazirx are cryptocurrency exchanges which we are dealing with in our project. Binance is the largest exchange in the world in terms of daily trading volume of cryptocurrencies and wazirx is India's one of the largest crypto exchange which is currently owned by binance itself. Binance was founded in 2017 and it was initially based on China but later moved its headquarters out of China following the Chinese government's increasing regulation of cryptocurrency.

Smallcase is an Indian stock market investment platform founded in 2015. In smallcase,there are small baskets of stocks where users can invest their funds in the basket meanwhile in our project we are dealing with cryptocurrency baskets which can yeild even more returns. For each basket there are fund managers who will invest the users money in different stocks,so that users don't need to worry about market. Smallcase also allows users to develop their own baskets of stocks.

Groww is an online investment platform based on India that allows investors to invest in mutual funds and stocks. Mutual funds are also related to diversified investments like our project but having lot's of disadvantages as compared to ours. Few of them are high expense ratio,locking period and all.

Stratzy is an advisory platform making stock investing easier for millennials. It requires too much time in picking stocks, actively managing them and also the lack of understanding among first time investors.Stratzy like smallcase helps to solve this issue.

The word DAO is vital to understand how staking works in these platforms in general. In 2016, a group of developers were inspired by the decentralisation of cryptocurrencies and came up with the concept of a decentralised autonomous organisation, or DAO. The DAO was a group of developers who came together to automate decisions and make cryptocurrency transactions easier9. By putting decision-making power in the hands of an automated system and a crowd sourced process, the DAO's creators hoped to minimise human mistake and manipulation of investor funds. The DAO, which runs on ether, was created to allow investors to send money anonymously from anywhere in the globe. The DAO would then issue tokens to those owners, letting them to vote on potential initiatives.

Titano is an example of how DEFI staking can provide a good profit. Titano is a protocol that promises automatic staking and compounding. Users' investments begin to grow from the time of purchase, according to the project. Titano Financial, the com- pany's finance division, intends to revolutionise decentralised finance (DeFi) services with its Titano Autostaking Protocol (TAP). TAP claims to have the highest fixed APY by rebasing payments every 30 minutes and using a straightforward buy- hold-earn approach. The protocol has a set APY of 102,483 percent, which translates to a daily return of 1.8999 percent.

The Anchor protocol establishes a money market between a lender seeking steady yields on his or her stablecoins and a borrower seeking stablecoins on stakeable assets. It functions similarly to traditional bank FDs, but in the crypto world, with twice the returns.

III. OBJECTIVES

To develop an application that will help naive people to invest into diversified basket of cryptocurrencies managed by professionals. Users can create an account and login to the site where he or she can use to buy/sell cryptocurrency baskets or create a basket of his own choice which will be approved by other professionals for use. When we buy a basket the fund is transferred to the portfolio manager who buys and sells with that money in each of these coins or projects included in that basket.

This application also provides estimated future returns of each coins using machine learning algorithms on real world data of each of these coins which can help each investors to have an insight on these coins before investing. Our application provides the flexibility of investing in a diversified portfolio of coins or DEFI projects.This application help users to invest into baskets of stocks that are managed by professionals helping them to gain high APY.

IV. METHODOLOGY

A. Modules used:

1) Machine learning models were created for both time series and sentimental analysis using LSTM for time series analysis and NLP for sentimental analysis respectively. Testing and training of these models were done.
2) A database is used to store all the datas required for the website.
3) Application development model for the front end design and GUI.
4) A payment gateway for transferring fund from account to cryptocase.
5) A Cloud hosting service to keep the website live.

B. Architecture

The User has the provision of creating and login into an account in cryptocase.A user can mainly do two task one is to invest into basket of coins or projects or create a basket of stocks.If the user chooses to invest he can choose from a wide variety of baskets.Each basket is based on a idea of theme.Themes can be ba like forks of certain DAO projects.The diversified portfolio helps to reduce the effect of rug pulls that happens frequently in DEFI.Each basket is supported by a fact sheet and methodology. The information displayed include the owner of basket also. Factsheet and Methodology can help a user get better understanding about the basket laid down by professional.Now after the user chooses to invest the user is prompted to redirect to a payment gateway and the user transmits money to the cryptocase and cryptocase will invest on behalf of that user int the basket of his choice.User can also track performance over time and redeem his rewards as he likes.If a user is trying to create a basket then that option is also available but the request for the basket will be first submitted to the cryptocase and only after proper review the basket will be listed publicly to avoid any fraud activities.

The platform supports real time sentimental analysis and time series analysis which can help to predict the overall market value of a idea or theme.Sentimental analysis can also give the Investor Insights about how the market favours the projects included in the basket.The login Information ,also the details about the basket and also information like which user invested in which basket is also stored on a central cloud database so that this information can be retrieved later and then used to get more insights into it.Each basket has a minimum investment value that the user needs to invest.Machine learning algorithms also helps the basket creators to manage the basket more efficiently.
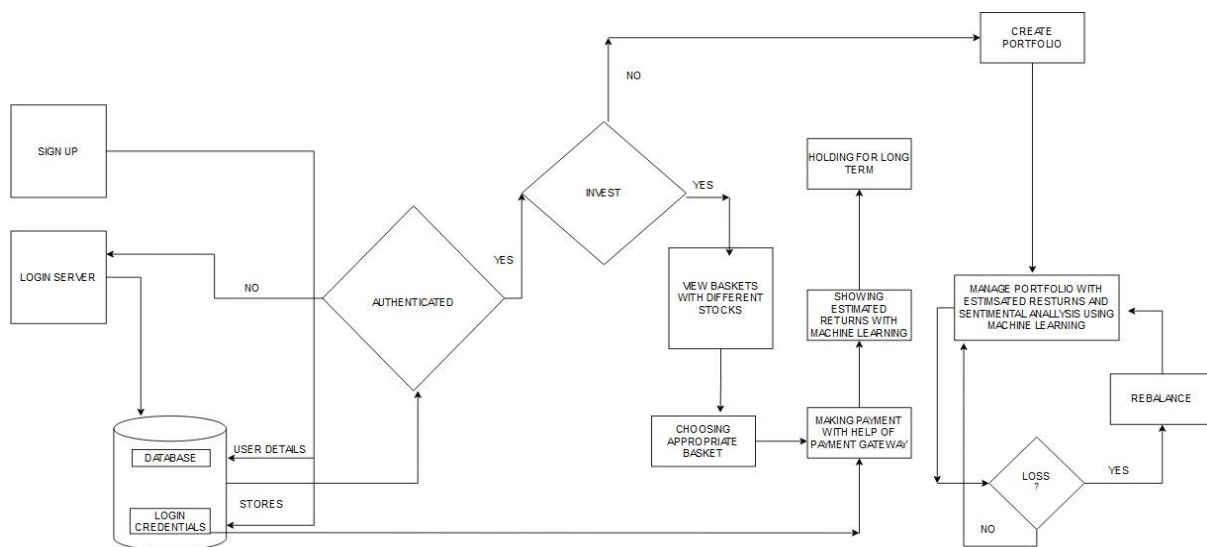

Fig. 1. Architecture of Cryptocase

C. Implementation:

Front end provides different basket of coins made by expert portfolio managers. Each basket of coins contains different coins or project to which the users money is invested diversely to yield high profits. When a user buys a basket the fund is transferred to the portfolio manager who buys and sells with that money in each of these coins or projects included in that basket Each of these baskets are supported by strong methodology and factsheets. To predict the future returns of each cryptocurrency coins machine learning models are used. A database is used to store the information of the users login. Also the information about the basket like minimum amount to invest, small description , created by and also which user invested in which basket.

First and foremost a time series model is used for predicting the future price using historical data and trend of those coins. Historical data and trends of these coins have great influence on their future prices hence this time series model can help to predict the future returns accurately most of the times. LSTM (Long Short-Term Memory) model is used for this time series prediction of the coins.[2]
Sometimes sentiments can also affect the future prices of the coins,like a tweet from an influential person about some cryp- tocurrency coins and all can massively affect the prices. Just like historical data, people also look for influential tweets and news which can affect these cryptocurrencies and their future prices so a sentimental model can help the investors to have more confidence in their investments. So there is also a sentimental analysis model for our project where we use twitter developers API to fetch these filtered tweets regarding cryptocurrencies as the input data to predict the returns of these coins. Textblob model which comes under NLP (Natural Language Processing) modules is used for the sentimental analysis of the coins[5].

A payment gateway is used to transfer funds from the users account to cryptocase whenever the user wants to invest in a basket and a cloud hosting service is also there to keep the website live.

V. RESULTS AND DISCUSSION

The platform is estimated to give a ample amount of returns to it's investors.This is calculated to be more than that of similar products available in the market.Tweets from twitter can really be helpful for understanding how sentiment analysis is a important factor[5] For the sentimental analysis model we did comparison study on algorithms like logistic regression , NLP modules like roberta[6] from transformers which is a pretrained model by 5 million tweets and also textblob[4].The comparison was done with help of labelled dataset to predict the F1 score of each model.From the table one it is clear that out of all models the textblob performed the best with a higher F1 score.Since we were dealing with realtime tweets we need accuracy and also speed of processing. Logistic regression had a very poor accuracy score.So it was evident that NLP algorithms performed better.

In this case also textblob was able to predict a polarity value more faster. Here 1 denotes positive news and -1

denotes negative news. In a nutshell the data fetched with help of twitter developer API was processed faster with textblob.

TABLE I
COMPARISON OF DIFFERENT MODELS.

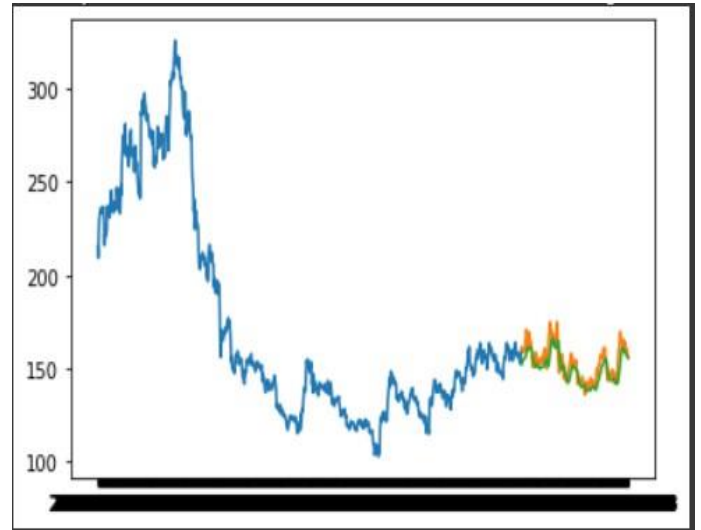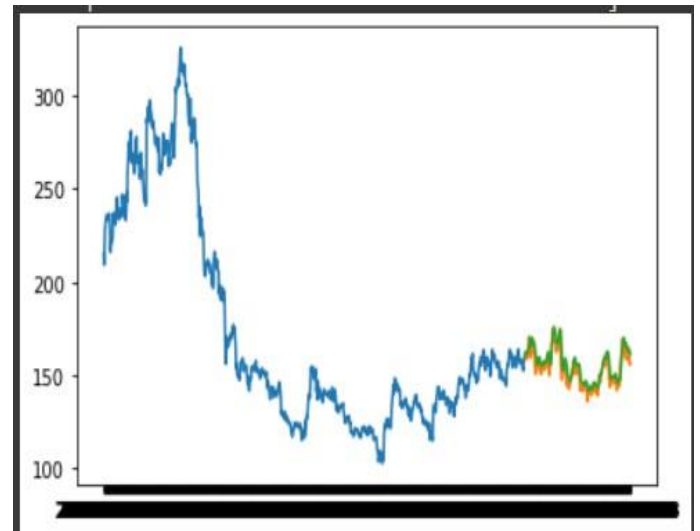| Model Name	F1 Score
Logistic Regression	0.5017421602787456
Roberta	0.845631067961165
Textblob	0.9096365455151717

Fig. 2. LSTM

Fig. 3. GRU

For the time series analysis,we did a comparison study on algorithms like LSTM(Long short Term Memory),GRU(Gated Recurrent Unit) by predicting the closing price of each coins.The comparison was done with help of past dataset which consist of date,opening price,closing price,high price,low price.Out of these two model LSTM performed better with higher accuracy for larger dataset.Since GRU only has 2 gates where LSTM has three gates,LSTM works faster.Fig 2 shows the graph of LSTM which shows the predicted output for the closing

price of each coins and Fig 3 shows the predicted output for GRU.When comparing, LSTM produce faster results and have more accuracy[12].

When it comes to the returns generated by the platform the baskets in the cryptocase will have a table showing the returns that it can generate in a period. This is infact not projected by cryptocase it is calculated as per the DEFI projects that cryptocase invest into. Cryptocase can give a estimated return in a period of one month by calculating the interest.Most baskets are highly risky in nature because there is no authority monitoring DEFI projects but with high risk high rewards are possible[13].It was noticed that some DEFI projects lock the overall value that is deposited and will pay only in rewards the projects like this requires the user to stay in locked in the with the basket and can redeem the profit only after the lock in period is over.

The user is allowed to take out there is investment amount as they want but they need to pay a little amount as a fees for the platform which is usually a small percent of the total profit earned. This little fee is divided between the basket creator and also cryptocase platform.

VI. FUTURE SCOPE

In future more features like bonds,staking in platform itself can also be introduced such that a fixed amount of returns can be obtained, like that of FD(Fixed Deposit). Cryptocurrencies and these platforms have a bright future ahead according to many research and an application like this can help even the beginners to start investing in these.

The Platform can be leveraged to have its own DAO and tokenomics in the future . A inbuilt staking pool like that of binance.These type of staking pool rewards the investor on daily basics.More the investors into the platform the tokenomics can be improved furthur into improving the rewards offered to investors in each rebase[9].Its is observed that the basket of coins can be an investment instrument for long term . As all the top coins have grown significantly in price over the past years.Not only that due to the huge market cap they can yield a good amount of returns with very low risk[15].

VII. CONCLUSIONS

Diversified investment portfolios are strategies used for risk management where the investment is diversified across different coins or projects which limits the exposure to any single assets of risks[3]. Diversification of portfolios have been already imple- mented and are widely used for stocks, bonds, commodities and many other such assets nowadays. Whereas diversified portfolios are not yet properly implemented for cryptocurrency platforms where investors can gain even more profits than other available assets. There are many pros to diversified portfolios such as reducing portfolio risks, offering higher returns for long term and all but there are some drawbacks too. It can limit gains for a short term, it can be time consuming and hard to manage each portfolios hence each portfolio managers should be experienced and professionals in their job and should

take time to analyse and manage these portfolios accordingly.

We have proposed a investment platform that could yield high APY(Annual Percentage Yield) or CAGR (Compound Annual Growth Rate) without further individual research and also is less risky to use as an alternative investment space because of it's diversified cryptocurrency portfolios. The proposed platform has a higher potential to produce much that 50-60 percentage more CAGR as compared to that of stocks or Mutual funds because of high volatility of cryptocurrency. Furthermore introducing diversified staking like feature can ensure a stable APY.

Our platform also using machine learning models to predict the future returns which can help the investors to know whether they are investing in a profitable project or asset. Both time se- ries and sentimental datas are also considered for predicting the returns and models are created respectively for them. Machine learning algorithms can be used for predicting future returns of each coins and to gain significant profits. Machine learning models can be created using available dataset and a machine learning algorithm which can predict the prices accurately. There are many machine learning algorithms from which the best fitting algorithm is selected by doing a comparison study of these available algorithms using the same dataset for all. This best
fitting or the more accurate algorithm is used for the machine learning model for predicting the future prices[1]. The results after our comparison study indicates :

LSTM model is best fitting for time-series model for pre- diction of future returns using historical data. Textblob model which comes under NLP modules is used as sentimental model using filtered tweets from twitters API as its input data.

This project can be of great help to lots of beginner investors to gain high profits and a platform which is less riskier to invest. This project also helps the investors to have an insight in the estimated future returns of each coins before investing in them which is put forward by machine learning models.

REFERENCES

[1] Laura Alessandretti, Abeer Elbahrawy, Maria Luca, and Andrea Baronchelli.Anticipating cryptocurrency prices using machine learning.Complexity,2018:1–16, 11 2018.

[2] Nan Jing, Zhao Wu, and Hefei Wang. A hybrid model integrating deep learningwith investor sentiment analysis for stock price prediction.Expert Systemswith Applications, 178:115019, 2021.

[3] Weiyi Liu. Portfolio diversification across cryptocurren- cies.FinanceResearch Letters, 29:200–205, 2019.

[4] S. Ahuja and G. Dubey, "Clustering and sentiment analysis on Twitter data," 2017 2nd International Conference on Telecommunication and Net- works (TEL-NET), 2017, pp. 1-5, doi: 10.1109/TEL-NET.2017.8343568.

[5] David Valle-Cruz, Vanessa Fernandez, Asdrubal Lopez-Chau, and Rodrigo Sandoval Almazan. Does twitter affect stock market decisions?financial sentiment analysis in pandemic seasons: A comparative study of h1n1 andcovid-19, 07 2020.

[6] RoBERTa: A Robustly Optimized BERT Pretraining Approach Yinhan Liu, Myle Ott, Naman Goyal, Jingfei Du, Mandar Joshi, Danqi Chen, Omer Levy, Mike Lewis, Luke Zettlemoyer, Veselin Stoyanov

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[7] M. Kanakaraj and R. M. R. Guddeti, "Performance analysis of Ensemble methods on Twitter sentiment analysis using NLP tech- niques," Proceedings of the 2015 IEEE 9th International Conference on Semantic Computing (IEEE ICSC 2015), 2015, pp. 169-170, doi: 10.1109/ICOSC.2015.7050801.

[8] DuPont, Quinn. "Experiments in algorithmic governance: A history and ethnography of "The DAO," a failed decentralized autonomous organiza- tion." Bitcoin and beyond (2017): 157-177.

[9] S. Wang, W. Ding, J. Li, Y. Yuan, L. Ouyang and F. -Y. Wang, "Decen- tralized Autonomous Organizations: Concept, Model, and Applications," in IEEE Transactions on Computational Social Systems, vol. 6, no. 5, pp. 870-878, Oct. 2019, doi: 10.1109/TCSS.2019.2938190.

[10] Youssef El Faqir, Javier Arroyo, and Samer Hassan. 2020. An overview of decentralized autonomous organizations on the blockchain. In Proceedings of the 16th International Symposium on Open Collaboration (OpenSym 2020). Association for Computing Machinery, New York, NY, USA, Article 11, 1–8. https://doi.org/10.1145/3412569.3412579

[11] Artur Meynkhard. Fair market value of bitcoin: halving effect.Investmen tManagement and Financial Innovations, 16:72–85, 11 2019

[12] Akyildirim, E., Goncu, A. Sensoy, A. Prediction of cryptocurrency returns using machine learning. Ann Oper Res 297, 336 (2021). https://doi.org/10.1007/s10479-020-03575-y

[13] Barinov, I., Arasev, V., Fackler, A., Komendantskiy, V., Gross, A., Kolotov, A., and Isakova, D. (2019). Proof of Stake Decentralized Autonomous Organization.

[14] Diedrich, H. (2016). Ethereum: Blockchains, digital assets, smart con- tracts, decentralized autonomous organizations (p. 360). Sydney: Wildfire publishing.

[15] Zetzsche, Dirk A., Douglas W. Arner, and Ross P. Buckley. "Decentralized finance." Journal of Financial Regulation 6.2 (2020): 172-203.