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MACHINE LEARNING FOR ANALYZING CRYPTOCURRENCY MARKET RISKS AND FINANCIAL MANAGEMENT

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ABSTRACT

Crypto currency is one of the famous financial state in all over the world which cause several type of risks that effect on the intrinsic assessment of risk auditors. From the beginning the growth of crypto currency gives the financial business with the wide risk in term of presentation of moneylaundering. In the institution of financial supports such as anti-money laundering, banks and secrecy of banks proceed as a specialist of risk, manager of bank and officer of compliance which has a provocation for the related transaction through crypto currency and the users who hide the illegal funds. In this study, the Hierarchical Risk Parity and unsupervised machine learning applied on the crypto currency framework. The process of professional accounting in term of inherent risk connected with crypto currency regarding the occurrence likelihood and statement of financial impact. Determining crypto currency risks comprehended to have a high rate of occurrence likelihood and the access of private key which is unauthorized. The professional crypto currency exprience in transaction cause the lower risk comparing the less experienced one. The Hierarchical Risk Parity gives the better output in term of returning the adjusted risk tail to get the better risk management result. The result section shows the proposed modelis robust to various intervals which are re- balanced and the co-variance window estimation.

Keywords: Machine Learning, Cryptocurrency, Market Risks and Financial Management, Convolutional Neural Networks (CNNs)

1. INTRODUCTION

Financial market is one of the complex systems that the definition of complexity didn't get accepted from universities and this cause the agreement in term of interacting the elements of complex systems together. Complex system modeling is similar to daunting task which the structure of this
system organized based on hierarchical manner that collected their own subsystems [1]_[3].This resources extracted by the nameof hierarchical models. Unfortunately, in the process of portfolio construction there is a hug challenge regarding the lack ofcorrelation matrix in hierarchical structure. This issue worsen the matrices for large covariance. In

recent decades, around 2500 type of crypto currencies which contains the 252.5 trillion dollar of trading in this market [4]_[6]. The crypto currency reverberation transpire in, out of order environment [7]_[10]. Even news publishers had moreinterest and closer attention to the price changes and the large remote of actions to the soar unmitigated. Rules set up is for investors protecting and try to stop the money laundry. Similarly, stop the crowdfor the _at currency. Regarding all the mentioned good wills, implementation and theories shows the dedicated movement of price of crypto currency market. Lahre *et al.* [11] propose the strategy of Hierarchical Risk Parity (HRP) on the multi-asset multi-factor allocation which achieves the goodresults on tail risk. Moreover, Jain *et al.* [12] applied the same strategy for the individual stocks to comport the nifty indexes of NIFTY. Raf_not *et al.* [13], compares different varients of HRP (HERC and HCCA) and evaluates the performance ofthem. Brauneis *et al.* [14] uses the mean-variance framework to analyze the portfolios of crypto currency based on the Markowitz optimization with the high ratio. Walid *et al.* [15] proposed the relationship between crypto currencies based on the highest frequency. The presented system gives the output of useful marketing insights and gives the allowance to the agent to improve the system stability. Platanakis *et al.* [16], demonstrates the estimation error in term of return estimation rather than naively diversified (1/N) strategy. Similarly, they used [17] the model of Black Litter manbased on the variance constraints to support the sophisticated portfolio technique forestimation control of the simple methods to manage the crypto currency. Saba *et al.* [18] applied the wavelet-based analysis for crypto currency multi-scale dynamic interdependence between the liquid crypto currencies to count the traders and investors heterogeneous behaviour. Corbet *et al.* [19] compare the different rules of trading in term of average-oscillator to breakout therange of trading strategies.

Based on the reports of crypto currency related audit considerations and Chartered Professional Accountants Canada (CPAC), building the general awareness for the intrinsic risks of the ecosystem of digital assets recommended. In 2018, the CPAC reported a list which shows the crypto currency special risks mentioned as below:

- Choosing the exchange of crypto currency based on the entity containsno control on transactions and its overbalanced for the maintained account of the entity.
- Crypto currency wallet which isbelonging to the entity has no account.
- Its not possible to access to crypto currency by loosing the private key.
- If an unauthorized party get any access to the private key then all the crypto currency stolen.
- Misrepresentation of private key of entity.
- Sending the incorrect address fromentity which is not possible of recovery from crypto currency.
- The transactions of crypto currency get recorded from entity which has no identification possibility based onthe anonymity of the transactions in block chain.
- The crypto currency contains the delay of transactions in the end of period.
- It become difficult to record the conditions and events for the financial purposes.

Some of the mentioned risks contain the higher likely-hood such as the private key which is belonging to only one person and its a secret number which gives the access to the block chain funds. By loosing this key getting access to the crypto currency

contains the highest-impact risk which cause the delay in process of crypto currency. The main contribution of this research summarized as below:

- Using the Hierarchical Risk Parityfor the crypto currency portfoliobased on the usage of machine learning techniques.
- The proposed system is able toexamine the professional accounting based on the associated risk of crypto currency and the impact which is expected from Financial
- statement.
- Finding the intrinsic risk which are correlated negatively in the crypto currency. Ranking the exchange

  level control risk based on thelikelihood evaluation.
- Finding the highest likelihood risk ofthe determined crypto currency.

The rest of the process is divided asfollows: Section 2 represents the brief literature review related to risk management of crypto currency framework. Section 3 presents the systematic structure of the proposed risk management system. Section 4 presents the implementation process and development environment details. We conclude this paper in the conclusion section.

2. EXISTING SYSTEM

Lahre *et al.* [11] propose the strategyof Hierarchical Risk Parity (HRP) on themulti-asset multi-factor allocation whichachieves the good results on tail risk. Moreover, Jain *et al.* [12] applied the same strategy for the individual stocks to comport the fifty indexes of NIFTY. Raf_not *et al.* [13], compares different varients of HRP (HERC and HCCA) and evaluates the performance of them. Brauneis *et al.* [14] uses the mean-variance framework toanalyze the portfolios of crypto currency
based on the Markowitz optimization with the high ratio.
Walid *et al.* [15] proposed the relationship between crypto currencies basedon the highest frequency. The presented system gives the output of useful marketing insights and gives the allowance to the agent to improve the system stability. Platanakis *et al.* [16], demonstrates the estimation error in term of return estimation rather than naively diversified (1/N) strategy. Similarly, they used [17] the model of Black Litterman based on the variance constraints to support the sophisticated portfolio technique forestimation control of the simple methods to manage the crypto currency. Saba *et al.* [18] applied the wavelet-based analysis for crypto currency multi-scale dynamic interdependence between the liquid crypto currencies to count the traders and investors heterogeneous behavior. Corbet *et al.* [19] compare the different rules of trading in term of average-oscillator to breakout therange of trading strategies.

DISADVANTAGES

- Choosing the exchange of crypto currency based on the entity contains no control on transactions and its overbalanced for the maintained account of the entity.
- Crypto currency wallet which isbelonging to the entity has no account.
- Its not possible to access to crypto currency by loosing the private key.
- If an unauthorized party get any access to the private key then all the crypto currency stolen.
- Misrepresentation of private key of entity.

- Sending the incorrect address fromentity which is not possible of recovery from crypto currency.
- The transactions of crypto currency get recorded from entity which has no identification possibility based onthe anonymity of the transactions in blockchain.
- The crypto currency contains the delay of transactions in the end of period.
- It become difcult to record the conditions and events for the financial purposes

3. PROPOSED SYSTEM

Using the Hierarchical Risk Parity for the crypto currency portfolio based on the usageof machine learning techniques.

The proposed system is able to examine the professional accounting based on the associated risk of crypto currency and the impact which is expected from financial statement.

Finding the intrinsic risk which arecorrelated negatively in the crypto currency.

Ranking the exchange level control risk based on the likelihood evaluation.

Finding the highest likelihood risk of thedetermined crypto currency.

ADVANTAGES

The proposed system implements a graph-based theory and using the machine learning techniques, the proposed system is processing in the following way.

- Clustering datasets.
- Recursive bisection on datasets.
- Quasi-diagonalization on datasets.

4. OUTPUT SCREENS

5. CONCLUSION

In the study, we have outlined a framework for automatically identifying motorcycle riders who do not wear helmets from CCTV footage and automatically obtaining their license plate information. It has become possible to detect motorcycle riders without helmets with a good degree of accuracy thanks to the application of Convolutional Neural Networks (CNNs) and transfer learning. Achieved accuracy was 98.72%. However, merely identifying these riders is insufficient to prosecute them. Consequently, the system retains the number plates of their motorcycles after recognizing them. The Transport Office can then utilize the stored number plates to access their database of licensed cars and obtain information about the motorcycle riders. Motorcyclists who express concern may then face penalties for breaking the law.

6. REFERENCE

[1] C. Y. Kim and K. Lee, ``Risk management to cryptocurrency exchange and investors guidelines to prevent potentialthreats," in *Proc. Int. Conf. Platform Technol. Service (PlatCon)*, Jan.2018, pp. 1_6.

[2] I. U. Haq, A. Maneengam, S. Chupradit, W. Suksatan, and C. Huo, ``Economic policy uncertainty and cryptocurrency market as a risk management avenue: A systematic review," *Risks*, vol. 9,no. 9, p. 163, Sep. 2021.

[3] J. Gold and S. D. Palley, ``Protecting cryptocurrency assets," *Risk Manage.*, vol. 68, no. 3, pp. 12_13, 2021.

[4] I. Barkai, T. Shushi, and R. Yosef, ``A cryptocurrency risk_return analysis for bull and bear regimes," *J. AlternativeInvestments*, vol. 24, no. 1, pp. 95_118, Jun. 2021.

[5] V. Boiko, Y. Tymoshenko, R. Y. Kononenko, and D. Goncharov, ``The optimization of the cryptocurrency portfolio in view ofthe risks," *J. Manage. Inf. Decis. Sci.*, vol. 24, pp. 1_9, Sep. 2021.

[6] G. Köchling, ``Essays in _nance: Corporate hedging, mutual fund managers' behavior, and cryptocurrency markets," M.S.thesis, Universitätsbibliothek Dortmund, Dortmund, Germany, 2021.

[7] Z. Umar, N. Trabelsi, and F. Alqahtani, ``Connectedness between cryptocurrency and technology sectors: Internationalevidence," *Int. Rev. Econ. Finance*, vol. 71, pp. 910_922, Jan. 2021.

[8] T. Kurosaki and Y. S. Kim, ``Cryptocurrency portfolio optimization with multivariate normal tempered stable processes and foster-hart risk," *Finance Res. Lett.*, vol. 45, Mar. 2022, Art.no. 102143.

[9] A. Masharsky and I. Skvortsov, ``Cryptocurrency market development in Latvia and the Baltic states," *Eur. Cooperation*, vol. 1, no. 49, pp. 7_22, 2021.

[10] S. Bhattacharya and K. Rana, ``A casestudy on cryptocurrency driven euphoria in 2020-21," *Int. J. Res. Eng., Sci.Manage.*, vol. 4, no. 3, pp. 9_11, 2021.