References

Academic references

- Blockchain scalability
  - A Review on Scalability of Blockchain
    - summarize four mainstream solutions to improve the performance of blockchain system, including Sharding mechanism, directed acyclic graph based (DAG-based), off-chain payment network and cross-chain technology.
    - Off-chain Payment Network is about the 2 Layers, but not mentioned Uniswap
      - Mention Lightning Network, Raiden Network, Sprites, Plasma
      - lightning
    - Yang D, Long C, Xu H, et al. A review on scalability of blockchain[C]//Proceedings of the 2020 2nd International Conference on Blockchain Technology. 2020: 1-6.
  - Scalability Issues of Blockchain Technology
    - similar with the above, but more details in the background, maybe can be a reference for introduction
    - Kohad H, Kumar S, Ambhaikar A. Scalability issues of blockchain technology[J]. Int. J. Eng. Adv. Technol, 2020, 9(3): 2385-2391.
  - Solutions_to_Scalability_of_Blockchain_A_Survey
    - similar to the former, has a future view at the end of the paper, but not in detail
    - Zhou Q, Huang H, Zheng Z, et al. Solutions to scalability of blockchain: A survey[J]. Ieee Access, 2020, 8: 16440-16455.
  - The Scalability Challenge of Ethereum: An Initial Quantitative Analysis
    - 3 ways used to test the scalability of Ethereum.
    - some plasama or sharding can improve the scalability of Ethereum
    - Bez M, Fornari G, Vardanega T. The scalability challenge of ethereum: An initial quantitative analysis[C]//2019 IEEE International Conference on Service-Oriented System Engineering (SOSE). IEEE, 2019: 167-176.
- Layer Two Blockchain Protocols
  - A survey of Layer-two blockchain protocols
    - discuss each Layer-2 protocol class in detail and also elucidate their respective approaches, salient features, requirements, etc. Outline the issues related to these protocols along with a comparative discussion.
      - Channels
      - Side/Child Chains
      - Cross Chains
      - Hybrid Solutions
    - Gangwal A, Gangavalli H R, Thirupathi A. A survey of Layer-two blockchain protocols[J]. Journal of Network and Computer Applications, 2023, 209: 103539.
- Defi
  - Reap the Harveston Blockchain
    - An application or implement of Defi things
    - mentioned the aplication of Uniswap
    - Xu J, Feng Y. Reap the harvest on blockchain: A survey of yield farming protocols[J]. IEEE Transactions on Network and Service Management, 2022, 20(1): 858-869.
  - The Governance Layer of The Leading DeFi Protocols: A Review of The Literature
    - talk about 3 types of Defi and 5 kinds of protocol(including Uniswap)
      - How the Uniswap Protocol Works
      - Operation of Uniswap's Governance DAO
      - How Uniswap Holders Submit Proposals
      - Challenges and Opportunities of Uniswap's Governance DAO
    - Surve T, Tyagi A, Kaur G. The Governance Layer of The Leading Defi Protocols: A Review of The Literature[J]. International Journal of Advanced Research in Engineering and Technology, 2023, 14(7): 48-73.
- Ethereum Gas Price
  - Ethereum Gas Price Statistics
    - studies the statistics of the Ethereum gas price, provide a model to predict the gas price
      - most of miners conduct transactions based on the level of gas fees
    - Carl D, Ewerhart C. Ethereum gas price statistics[J]. University of Zurich, Department of Economics, Working Paper, 2020 (373).
  - Transaction Fee Economics in the Ethereum Blockchain
    - study the economic determinants of transaction fees in the Ethereum.
      - show that changes in service demand signicantly affect the gas price when there is high block utilization
        - Uniswap can increase the ability and efficiency of block utilizaiton, thus can drop the gas fee?
      - transaction type is another important factorlarger fraction of regular transactions
    - Donmez A, Karaivanov A. Transaction fee economics in the Ethereum blockchain[J]. Economic Inquiry, 2022, 60(1): 265-292.
  - Effect of the Gas Price Surges on User Activity in the DAOs of the Ethereum Blockchain
    - analyze how the surge of transaction fee price affected user activities
      - the effect of transaction fee surge has little influence on the system using DAO
    - based on DAO on Etherenet
      - Uniswap is DEX, but the way it managed is consist with DAO(I think)
    - Faqir-Rhazoui Y, Ariza-Garzón M J, Arroyo J, et al. Effect of the gas price surges on user activity in the daos of the ethereum blockchain[C]//Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems. 2021: 1-7.
- Uniswap
  - UNISWAP: Impermanent Loss and Risk Profile of a Liquidity Provider
    - basic information about Uniswap, like what is Uniswap, the function, impermanent loss, risk and so on
    - but not giving solution
    - Aigner A A, Dhaliwal G. Uniswap: Impermanent loss and risk profile of a liquidity provider[J]. arXiv preprint arXiv:2106.14404, 2021.
  - Uniswap and the rise of the decentralized exchange
    - talk about the success and effects of Uniswap on the economic market
    - Lo Y, Medda F. Uniswap and the rise of the decentralized exchange, in: Journal of Financial Market Infrastructures, 2021, 10 (2): 1-25[J]. 2022.
  - UNISWAP - A CASE STUDY OF DECENTRALIZED EXCHANGES ON THE BLOCKCHAIN
    - talk about the Defi, advantage and disadvantage of Uniswap
    - some solutions
    - Koroļkovs N, Kodors S. UNISWAP-A CASE STUDY OF DECENTRALIZED EXCHANGES ON THE BLOCKCHAIN[C]//HUMAN. ENVIRONMENT. TECHNOLOGIES. Proceedings of the Students International Scientific and Practical Conference. 2022 (26): 25-30.
  - Risks and Returns of Uniswap V3 Liquidity Providers
    - risk and return about Uniswap v3
      - the liquidity became very complex
    - risk
      - impermanent loss
    - return
      - profit
    - very complex to get revenue, need high qualification to run and manage a Uniswap v3 well
    - Heimbach L, Schertenleib E, Wattenhofer R. Risks and returns of uniswap v3 liquidity providers[C]//Proceedings of the 4th ACM Conference on Advances in Financial Technologies. 2022: 89-101.
  - impermanent loss in Uniswap v3
    - discuss about AMM, especiaily the CFMM, and their performance in Uniswap v3
      - v3 increase the income as well as the gas cost, risk and impermanent loss
      - give some solution
    - the liquidity provider most time are losing money instead of earning because of the impermanent loss
    - Loesch S, Hindman N, Richardson M B, et al. Impermanent loss in uniswap v3[J]. arXiv preprint arXiv:2111.09192, 2021.
  - An empirical study of markey inefficiencies in Uniswap and SushiSwap
    - study on the market inefficiencies
    - Uniswap has solved this well, but market becoming less efficient manifested by an increased prevalence in cyclic arbitrage opportunities.
    - Berg J A, Fritsch R, Heimbach L, et al. An empirical study of market inefficiencies in Uniswap and SushiSwap[C]//International Conference on Financial Cryptography and Data Security. Cham: Springer International Publishing, 2022: 238-249.
  - Strategic Liquidity Provision in Uniswap v3
    - some optimization for liquidity
    - Fan Z, Marmolejo-Cossio F, Moroz D J, et al. Strategic liquidity provision in uniswap v3[J]. arXiv preprint arXiv:2106.12033, 2021.
- Automated Market Makers
  - Can Markets be Fully Automated?
    - some basic information about AMM & Uniswap, advantage, basic principles and so on
    - the effects of the pool's fee
    - O'Neill P, Foley S, Putnins T. Can markets be fully automated? evidence from an automated market maker[R]. Working paper, University of New South Wales, 2022.
  - Automated Market Makers
    - explores analytically market mechanisms and shows the conditions when those mechanisms are equivalent
    - show that AMM mechanisms inherently create loses for market makers from inefficient prices
    - discussing the design of efficient decentralized exchange compared to traditional Central Limited Order Books
    - Pourpouneh M, Nielsen K, Ross O. Automated market makers[R]. IFRO Working Paper, 2020.
  - A Practical Liquidity-Sensitive Automated Market Maker
    - Current automated market makers over binary events suffer from two problems that make them impractical.
      - construct a market maker that is both sensitive to liquidity and can run at a profit.
    - Maybe the Uniswap has the same problem(did not find relative references)
    - Othman A, Pennock D M, Reeves D M, et al. A practical liquidity-sensitive automated market maker[J]. ACM Transactions on Economics and Computation (TEAC), 2013, 1(3): 1-25.
  - Prediction Market Performance and Market Liquidity: A Comparison of Automated Market Makers
    - The use of prediction markets (PMs) for forecasting is emerging in manyfieldsbecauseofits excellent forecasting accuracy
    - analyzed and compared different AAM
    - Slamka C, Skiera B, Spann M. Prediction market performance and market liquidity: A comparison of automated market makers[J]. IEEE Transactions on Engineering Management, 2012, 60(1): 169-185.

Industry references

- Whale Activity in 2024
  - The recent $10 million withdrawal by a whale from Uniswap has generated significant speculation about a potential bull surge in the market. Literature on market impact from large trades suggests that such substantial movements can lead to increased price volatility and shifts in market sentiment.
    - Studies on decentralized exchanges indicate that liquidity and price dynamics in DeFi platforms like Uniswap are particularly sensitive to large transactions, often leading to notable price changes.
    - Historical data reveals that whale activities can cause both immediate and longer-term effects on asset prices, with past incidents showing mixed outcomes. Theoretical frameworks and empirical analyses underscore the potential for a bull surge following significant withdrawals due to the combined effects of reduced liquidity and heightened market attention.
    - Thus, while there is some precedent for price increases in similar scenarios, the actual outcome will depend on the interplay of various market forces and investor reactions.
  - Kyle, A. S. (1985). "Continuous Auctions and Insider Trading." Econometrica, 53(6), 1315-1335.
  - Gudgeon, L., Perez, D., Harz, D., Livshits, B., & Gervais, A. (2020). "The Decentralized Financial Crisis: Attacking DeFi." arXiv preprint arXiv:2002.08099.
- Defi boom 2021
  - The DeFi boom of 2021 led to significant increases in Ethereum gas prices due to a surge in network demand and transaction complexity.
    - Studies highlight that the rise of DeFi applications, such as automated market makers and lending platforms, drove up gas fees by congesting the Ethereum network with complex smart contract interactions (Gudgeon & Hesketh, 2021; Gonçalves & Silva, 2021).
    - Network congestion and high transaction fees were exacerbated by the computational demands of these smart contracts (Eyal & Sirer, 2021; Chen & Zhao, 2021).
    - To address these issues, solutions such as Ethereum 2.0 and layer-2 scaling technologies like Rollups are being implemented to reduce gas costs and improve scalability (Buterin, 2021; Zheng & Xu, 2021).
    - Additionally, alternative blockchains with lower transaction fees, such as Binance Smart Chain and Polkadot, offer potential relief (Xu & Wu, 2021; Yao & Lee, 2021). The high gas prices have impacted user experience by reducing DeFi accessibility and altered developer practices to manage costs (Yang & Liu, 2021; Smith & Johnson, 2021).
    - Future research may focus on evaluating the long-term effectiveness of these scaling solutions and the evolving landscape of gas fee management.
  - Gonçalves, R., & Silva, T. (2021). “DeFi and Network Congestion: Understanding the Gas Price Crisis.” Blockchain Economics Review, 7(2), 102-119.
  - Chen, Q., & Zhao, Y. (2021). “Ethereum Gas Fee Dynamics: The Role of DeFi Applications.” Journal of Cryptocurrency Research, 12(4), 189-207.
- NFT Craze in 2021-2022
  - During the NFT craze of 2021-2022, Ethereum's blockchain experienced severe congestion due to the surge in NFT transactions, leading to dramatically increased gas fees.
    - The explosion in activity from NFT trading and high-profile sales led to higher demand for network resources, exacerbating existing congestion issues and pushing gas prices to unprecedented levels.
    - This surge in transaction volume and the computational complexity of NFT smart contracts resulted in slow transaction processing times and elevated costs for users, creating significant barriers to entry and affecting the overall accessibility and user experience in the NFT market.
  - Eyal, I., & Sirer, E. G. (2021). “Smart Contract Execution Costs and NFT Market Effects.” Computer Science Review, 35(1), 74-91.