**Ethereum Gas Price Prediction**

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**1. Motivation**

In Ethereum, Gas refers to the unit that measures the amount of computational effort required to execute specific operations on the Ethereum network. Since each Ethereum transaction requires computational resources to execute, each transaction requires a fee. Reaching a transaction consensus costs a certain number of gas. They are purchased by users in their self-defined gas prices. Generally, the higher the gas price, the shorter the time is spent on reaching consensus,thus speeding the transactions. The exact price of the gas is determined by supply and demand between the network's miners, who can decline to process a transaction if the gas price does not meet their threshold, and users of the network. Since the transaction gas prices still vary greatly in a block, generating a reasonable price that can make a trade-off between the consensus time and the gas's cost is of great significance.

**2. Related work**

1. The paper [1] uses a regressive approach to build the prediction model on the basis of various features of a transaction, this would form the basis of our model.
2. The paper [2] uses a model different from the widely used Geth algorithm, this provides us a different perspective on our model and provides other features for inclusion in our model

**3. Timeline**

1. Learning intricacies of Ethereum transactions [1 week]
2. Preprocessing transaction data [1 week]
3. Feature Extraction [1 week]
4. Analyzing the data [1 week]
5. Developing and testing various models [4 weeks]
6. Deriving conclusions and writing final report [1 week]
7. Buffer [1 week]

**4. Individual Tasks**

1. Preprocessing of data (Saatvik, Rupanshoo)
2. Feature Extraction (Aryan, Pragya)
3. Data Analysis (Pragya, Saatvik)
4. Development of models (All)
5. Final Report (Rupanshoo, Aryan)

All four of us will contribute equally towards performing experiments and analyzing data and results.

**5. Final Outcome**

The main objective of our model would be to predict the gas price for a transaction so that it is timely included in a block and it does not lead to avoidable costs. We would compare the outcomes of our approach to the most widely used gas price predictor to calculate the urgency-cost tradeoff. Furthermore, we plan to parameterize our model with user’s urgency bias

**6. References**

[1] Fangxiao Liu, Xingya Wang\*, Zixin Li, Jiehui Xu, Yubin Gao. (2019). Effective GasPrice Prediction for Carrying Out Economical Ethereum Transaction.

[2] Sam M. Werner, Paul J. Pritz, and Daniel Perez. (2020). Step on the Gas? A Better Approach for Recommending the Ethereum Gas Price.

[3] Vinicius C. Oliveira, Julis Almeida Valadares, Jose Edurado A. Sousa, Alex Borges Vieira, Heder Soares Bernardino, Saulo Moraes Villela. (2021). Analyzing Transaction Confirmation in Ethereum Using Machine Learning Techniques.

[4] Matthew Chen, Neha Narwal, and Mila Schultz. Predicting Price Changes in Ethereum.