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Abstracts

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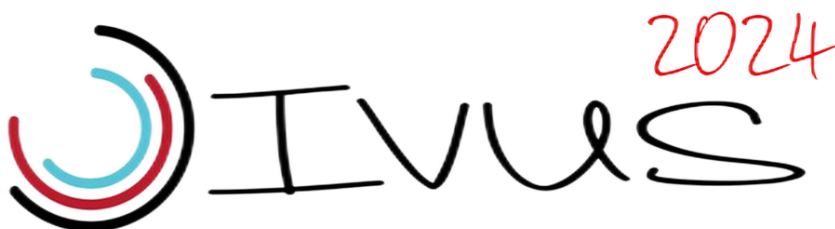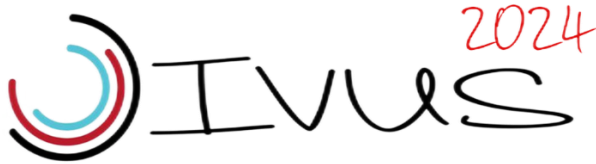
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Data Processing Method for Gini Coefficient Application in Assessing the Centralization Within the BTC Lightning Network

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The Bitcoin Lightning Network (BLN) is a second layer blockchain solution, which emerged to address scalability issues. However, potential centralization concerns have surfaced as current distribution might indicate a trend toward centralization. The Gini coefficient, a measure of inequality, can be applied to BLN to assess its centralization by analyzing the distribution of channel capacity among nodes. This research proposes a data processing method specifically designed to utilize the Gini coefficient for evaluating centralization within the BLN. Main challenge in applying the Gini coefficient to assess BLN centralization is limitations of existing research. The lack of description on how to process data makes it difficult to replicate these studies and verify the conclusions made by other researchers. The proposed data processing method addresses the challenges associated with collecting data from both Bitcoin blockchain and Lightning Network, including data linking, storage, and variable selection. Results of the experimental research of the proposed method show that Gini coefficient increased from 0.829 to 0.930. The results are confirmed by existing research and can be used for future research to explore the BLN centralization.