

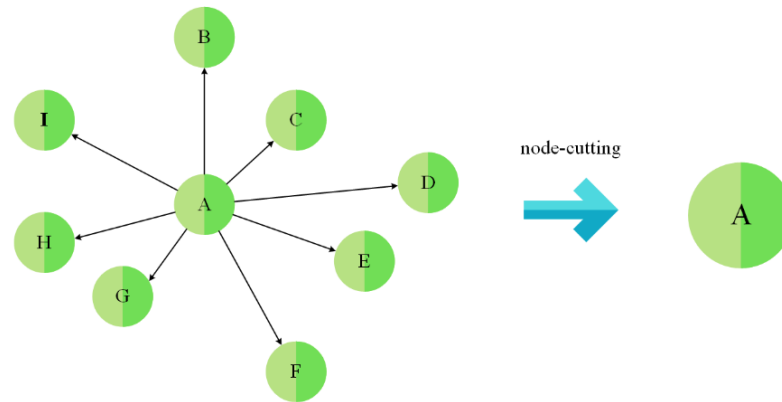
BTC-Shadow: An Analysis and Visualization System for Exposing Implicit Behaviors in Bitcoin Transaction Graphs

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Problems & Ideas

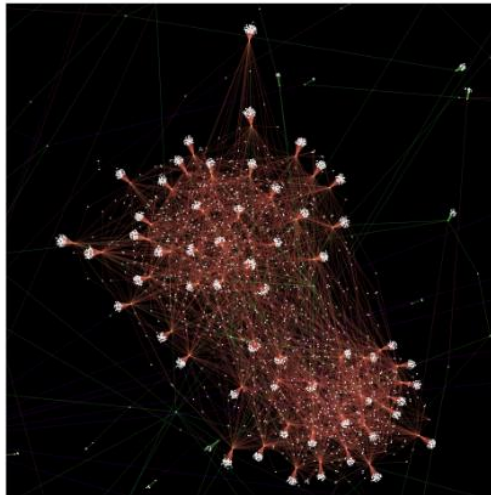
- Problems of Current analytics systems for Bitcoin:
 - None of the available tools can provide exploring the features of connection related to the address and observe significant visual pattern.
 - Existing systems can't navigate to abnormal node clusters effortlessly from large node groups and then analyze the local interlink characteristics .
- Ideas: uses a novel node-cutting method and the fast layout algorithm named ForceAtlas2 to generate graphs



Given an account node that has only one transaction and is in the output, if the transaction has only one input and output, the account node and its connection edge will be cut and the diameter of the input node will be enlarged.

Main Contributions

- Contributions:
 - We construct a heterogeneous graph of Bitcoin transactions as well as an isomorphic graph that is not provided by similar tools or systems.
 - We suggest a node-cutting method to reduce the number of nodes in graphs, which can make large-scale Bitcoin transaction graph analysis easier while preserving network structures possible.
 - With a variety of customized interactive interfaces to display the attributes of transaction graphs, we create BTC-Shadow to disclose hidden characteristics of Bitcoin transactions.



Finding complex relationships among nodes in BTC-Shadow is straightforward because the layout algorithm places the nodes reasonably. The figures below are heterogeneous and isomorphic graphs of the gambling pattern