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“ChainNet: Learning on Blockchain Graphs with Topological Features”

With emergence of blockchain technologies and the associated cryptocurrencies, such as Bitcoin, understanding network dynamics behind Blockchain graphs has become a rapidly evolving research direction. Unlike other financial networks, such as stock and currency trading, blockchain based cryptocurrencies have the entire transaction graph accessible to the public (i.e., all transactions can be downloaded and analyzed). A natural question is then to ask whether the dynamics of the transaction graph impacts the price of the underlying cryptocurrency.

In this talk I will show that standard graph features such as degree distribution of the transaction graph may not be sufficient to capture network dynamics and its potential impact on fluctuations of Bitcoin price. In contrast, the new graph associated topological features computed using the tools of persistent homology, are found to exhibit a high utility for predicting Bitcoin price dynamics. Using the proposed persistent homology-based techniques, I will present the ChainNet platform, a new elegant, easily extendable and computationally light approach for graph representation learning on Blockchain.