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MIT WORLD PEACE UNIVERSITY | PUNE
TECHNOLOGY, RESEARCH, SOCIAL INNOVATION & PARTNERSHIPS

Department of Computer Science & Engineering

Bachelor of Technology, Capstone Project, Batch of 2021, Group 92

Project Topic

"Correlation Network Analysis for Financial Markets - Study, Analysis & Implementation"

Abstract

In this capstone project for Bachelor's Degree Requirement, We studied the correlation networks, analyzed them in the context of Indian financial markets, We chose the Nifty 50 market(Top 50 companies in India according to market capitalization) for our analysis and implementation.

Correlation networks are graphs consisting of nodes and edges where edges between the nodes are determined based on the correlation coefficient between nodes. This way we have a graph of connected nodes based on their similarities. These networks are also known as similarity networks. Using the correlation networks, we can model the similarity behavior of stocks, where we use the correlation coefficient between time series prices of two stocks as a similarity metric.

On these networks, we used network clustering, also called community detection to partition the network into different groups, that way stocks that are more similar to each other are grouped together. This technique on the stock market has been already studied by many academic researchers.

Based on our research and studies, we built a dashboard where users can create a correlation network, visualize it, and cluster it into different partitions. We used a Dash Framework to set up a front end and used python libraries like yahoo financials, pandas, networkx for data acquisition, data manipulation, and network analysis respectively on the back end.

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