

Contextual Information Based Stock/Index Market Prediction using Explainable Dynamic Graph Neural Networks

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Nov 2019

1 Introduction

Stock-related news always attract intense attention from people who want to be well informed about making a good fortune. Financial news are in diverse forms, e.g., business regulation posted by authorities and governments, press releases or report from public media, or even opinion-sharing blogs from ordinary citizens. All these pieces of information can influence on the stock price along the time series.

2 Proposal

our contributions can be summarized as follows:

- **Reimplement the state-of-the-art.** The GCN-based model proposed by [1] is a state-of-the-art method in contextual information mining. We have completely reimplemented it. Also, we are the first to apply GCN-based models in the field of financial event prediction.
- **Propose an innovative and effective model.** We proposed a new GIN-based model for our prediction, and it also proves to outperform the baseline. We believe that more powerful adaptations can be foreseen shortly and it has potential to outperform GCN-based model.
- **Conduct intense and insightful experiments.** We have gone through many experimental evaluations in different settings and different models. The comparison we made also entails many insightful lessons on predicting the stock market. We share them with readers in the discussion part, i.e., Chapter 6.

3 Motivation

From this assignment, we hope to have a better understanding on:

1. GNN structure.
2. How graph applied to financial market including stocks, sectors.

4 Division of labor

Lanqing Xue CSE 20361709 : try cleaning data.

Jianyue Wang: Prepare baseline model .

Han Feng, CSE 20407369 : Apply GCN on new dataset.

Zhiliang Tian, CSE : Improve the performance.

We will divide the labor to implement separately and write the report together.

References

- [1] Songgaojun Deng, Huzefa Rangwala, and Yue Ning. Learning dynamic context graphs for predicting social events. In *Proceedings of the 25th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining*, KDD '19, pages 1007–1016, New York, NY, USA, 2019. ACM.