

# Knowledge Graph Powered Machine Learning in Financial Decision Making

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## Abstract

It is well known that machines can process and analyze a large amount of data in a short time, and the application of this advantage in the financial field can help people get a lot of information with suggestions in a flash, such as timely estimation of whether stocks price will rise or fall. Existing open-source financial databases Tushare are used to obtain new real-time financial data, analyze it, and make judgments. Currently, there are existing methods and algorithms to make predictions, but the accuracy depends on the estimate of whether the trends are consistent with future events. Since there are a lot of movement-related factors. The stock price movement depends not only on people at a higher price buying or selling at a lower price. Meanwhile, many factors behind the trend, such as some major decisions of enterprises, new policies or regulations of the state, and so on, can have an impact on the stock price. However, the impact of information on stocks is still in the stage of exploring the law, although people will automatically have a general inference about the stock trend after they correspond to obtaining information, but in this era of information explosion, no one can insist on obtaining all the information every day and matching the corresponding stocks one by one. Use the knowledge graph to construct the basic information of each

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stock. Using the Chinese word segmentation toolkit pkuseg-python developed by the Computational Linguistics and Machine Learning Research Group of Peking University to process news word segmentation, use Baidu emotion API and cnsenti Chinese emotion analysis database to analyze news sentiment and judge whether each news item sentiment is positive or negative. Using fuzzy search established the positive and negative relationship between each news and each stock and stored it in the knowledge graph. Use the LSTM model to evaluate historical data and stock prices, and predict future stock price trends by adjusting parameters and related data. Through experiments, this paper preliminarily constructs the knowledge graph of all stock information, adds relationships, and uses machine learning to predict prices to confirm the scheme's feasibility. It also proves that it is not enough to use the news to predict stock prices, and more influencing factors need to be added as judgment conditions. Moreover, the analysis of news, especially the processing of financial news, needs to be improved. News keeps pace with the times, and in terms of word segmentation, it is also necessary to identify and summarize new words at all times. The sentiment vocabulary judgment of news also needs to be strengthened. Laying the foundation for the next experimental content addition.

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