Investigating Relationships Between Financial News Sentiment and Stock Price

Context and Motivation

Investors today have access to a wealth of information online to help evaluate stock performance. Most corporations maintain websites that offer key financial data such as sales, earnings, assets, and liabilities —factors that can influence a company's stock value. In addition, platforms like Yahoo! Finance provide extensive financial data and analysis tools. While some newspapers have reduced their financial coverage, sources such as The Wall Street Journal and major metropolitan papers still offer relevant stock market updates. Financial periodicals like Bloomberg Businessweek, Fortune, Forbes, Money, and Kiplinger's Personal Finance—both in print and online—also provide valuable insights for investors.

Importantly, financial discourse shared through online news articles not only reflects investor sentiment but can also influence it. This interplay between news sentiment and market behavior is at the core of this project.

Github Repository: https://github.com/chaizhang/StockSentimentAnalysis

Project Objective

The goal of this project is to explore how sentiment expressed in news articles can influence stock market performance. Specifically, the project seeks to identify correlations between sentiment trends and stock price movements and evaluate the potential for using sentiment analysis as a predictive tool. The focus will be on Nvidia's stock, examining how sentiment derived from news articles relates to its market behavior.

Deliverables

You will:
- Fetch and preprocess stock and news data using the Alpaca API
- Perform sentiment analysis on financial news
- Apply moving averages to smooth noisy data
- Analyze time-lagged correlations and Granger causality
- Communicate insights effectively and clearly