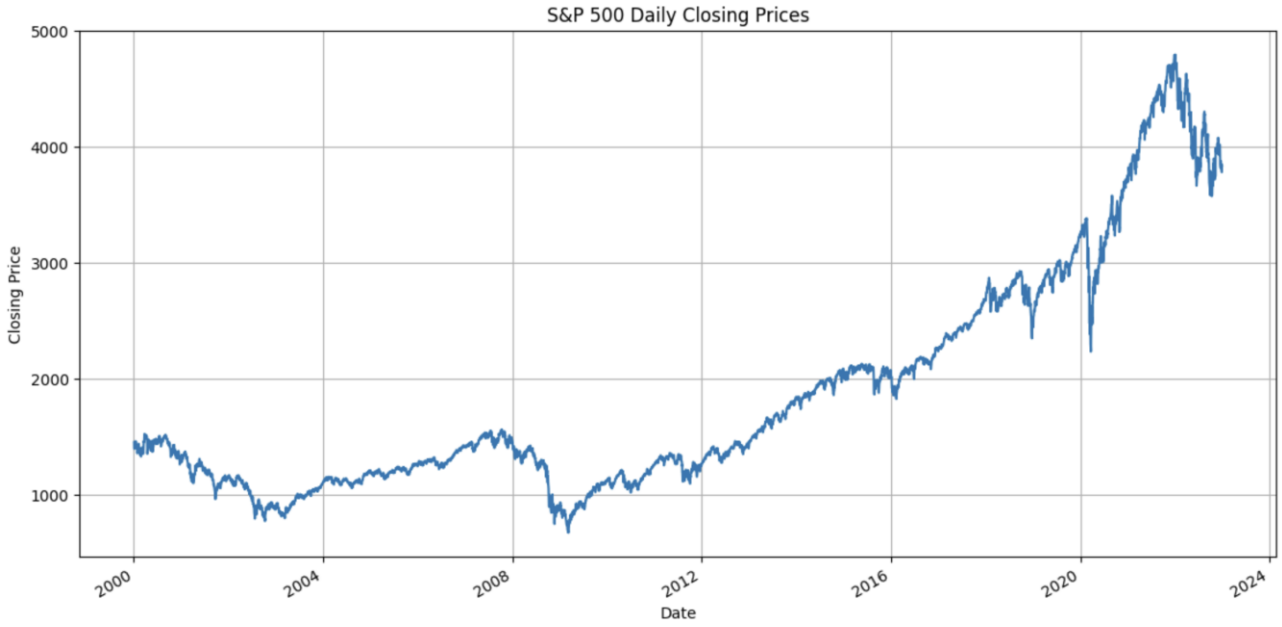
Project Proposal for Analyzing the S&P 500 Index ^GSPC Historical Data – Ali Kazemi 202289683

1. Introduction

The S&P 500, or simply the S&P, is a stock market index that measures the stock performance of 500 large companies listed on stock exchanges in the United States. This project will utilize the daily historical data of the S&P 500, using metrics such as opening price, closing price and volume.

2. Preliminary Visualization



this visualization showcases the daily closing prices of the S&P 500 From 1/1/2000 up to 1/1/2023

3. Intended Statistical Examinations

1. Trend Analysis:
   - Moving Averages
2. Extreme Value Identification:
   - Market Surges/Crashes
   - Outliers
3. Volatility:
   - rolling standard deviation of returns.
4. Event Correlation:
   - Correlate major price movements with significant historical events (financial crises, geopolitical events, policy changes, etc.) to provide contextual understanding.
5. Sensitivity Analysis:
   - Analyze how the number of identified extreme values changes with different thresholds. For instance, how does defining a 'significant market drop' as a 2% decrease versus a 5% decrease change our findings.
6. Technical Indicators Analysis:
   - Relative Strength Index (RSI)
   - Moving Average Convergence Divergence (MACD)

Through this analysis, S&P500 historical behavior will be analyzed, giving us insights on historical patterns, volatility, and reactions to major events.

Source:

Yahoo Finance (via `yfinance` Python library)

- https://finance.yahoo.com/quote/%5EGSPC/history?p=%5EGSPC
- pip3 install yfinance

GitHub:

- https://github.com/alikazemi8/Computer-Tools-Project.git