Progress Report: Stock Portfolio Analyzer

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DATE: 3/10/24

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Introduction

This report outlines the development and functionality of the Stock Portfolio Analyzer, a Python-based tool designed to assist investors in making informed decisions by analyzing historical stock data. The tool leverages the yfinance library to retrieve real-time and historical stock data, while incorporating key technical indicators such as the Relative Strength Index (RSI) and Simple Moving Averages (SMA). These indicators are commonly used to assess market trends, identify potential buy or sell signals, and gauge overall stock performance.

Overview

This report summarizes the development and functionality of the Stock Portfolio Analyzer built using Python. The tool leverages the yfinance library for data retrieval and includes key technical indicators such as the Relative Strength Index (RSI) and Simple Moving Averages (SMA).

Objectives

- Fetch historical stock data for analysis.
- Calculate technical indicators (RSI and SMA) to assist in investment decisions.
- Visualize stock performance and indicators to aid in portfolio management.

Features Implemented

1. Data Fetching

- **Functionality:** The tool retrieves historical stock prices for a specified ticker over a defined date range.

2. Technical Indicator Calculations

- **Relative Strength Index (RSI):**
  - **Purpose:** Identifies overbought or oversold conditions in a stock.
  - **Calculation:** Computes the RSI based on price changes, gains, and losses.
- **Simple Moving Averages (SMA):**
  - **Purpose:** Provides insights into price trends over 20-day and 50-day periods.

3. Data Visualization

- **Closing Price and Moving Averages:**
  - Visualizes the closing price along with the 20-day and 50-day SMAs.
- **RSI Visualization:**

- Plots the RSI with overbought (70) and oversold (30) thresholds indicated.

Data Analysis

- **Sample Stock Analyzed:** Apple Inc. (AAPL)
- **Date Range:** January 1, 2020, to January 1, 2023

Results Observed

- **Closing Price Trends:** Visualized with moving averages, showing potential buy/sell signals based on SMA crossovers.
- **RSI Trends:** Indicates periods of overbought or oversold conditions, assisting in identifying entry and exit points.

Future Plans

1. **Expand Ticker Support:** Modify the code to allow analysis of multiple stock tickers.
2. **User Interface Development:** Consider implementing a simple user interface for easier interaction.
3. **Additional Indicators:** Explore incorporating other technical indicators (e.g., MACD, Bollinger Bands).
4. **ARIMA Model Integration:** Implement ARIMA for better forecasting of stock prices based on historical data.
5. **Handling More Data:** Optimize the tool to manage larger datasets for comprehensive analysis.
6. **Incorporate More Technical Tools:** Add pattern recognition and other technical analysis tools to enhance trading strategies.

Conclusion

The Stock Portfolio Analyzer successfully retrieves and analyzes stock data, providing valuable insights through technical indicators. With planned enhancements, the tool will offer even greater utility for portfolio management.

Reference

How to Make Money in Stocks A WINNING SYSTEM IN GOOD TIMES OR BAD FOURTH EDITION WILLIAM J. O'NEILs

- "The use of technical indicators such as moving averages and relative strength is crucial in identifying stocks with strong momentum and potential for significant price movement."
- **ISBN-13:** 978-0071614139

Investopedia - Simple Moving Average (SMA)

- A detailed explanation of the Simple Moving Average (SMA) and its role in identifying stock trends.
- https://www.investopedia.com/terms/s/sma.asp

Yahoo Finance API Documentation (yfinance)

- The official documentation for the **yfinance** library, which is used for fetching historical stock data in Python.
- https://pypi.org/project/yfinance/