Next Product – 2023 Year-End Hackathon

Team Leader: Michael Lively
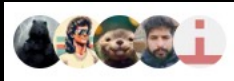
Project Title: Stock Portfolio Manager

Short Description: Creates a risk-adjusted Stock Portfolio, optimized and fine-tuned by three AI investment agents.

Product: Stock Portfolio Manager

Team Leader: Michael Lively

Team Members:
Kent Gray (kent_gray559),
David Lively (DavidLively),
Alvin Abhinav (abhinav2304101),
Nilam (nilam576771)

Tags: Investment, Agents, Gemini, LangChain, Custom GPT

Next Product– Financial Impact

Algorithmic trading accounts for **about 60-75 percent** of the overall trading volume

Market Share of Algorithmic Trading by Asset Class

Equities
Futures
Options
FX
Fixed Income

As of 2017
Source: Goldman Sachs, Aite Group
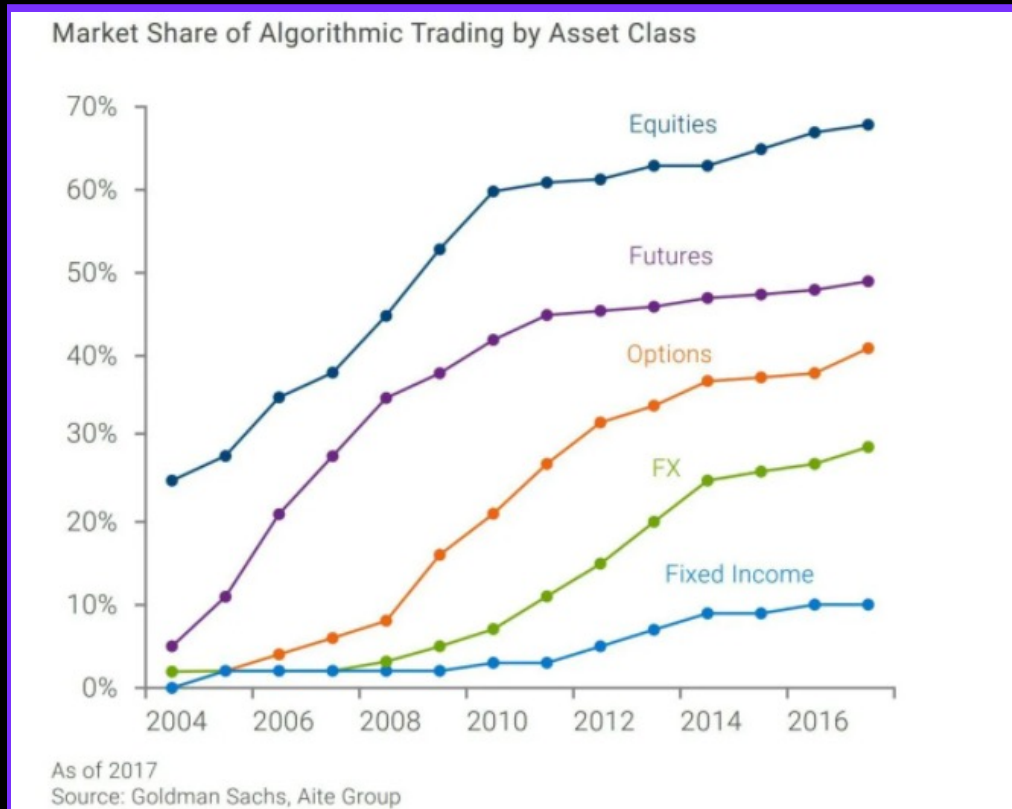
1.Algorithmic Trading Solutions: Sale or subscription of AI algorithms for automated trading, analyzing market data and executing trades.

2.Trading Signal Services: Subscription-based AI analysis that provides trading signals or market predictions to traders and investors.

3.Custom AI Trading Platform Development: Development and sale/licensing of tailored AI trading platforms for institutional clients like hedge funds and banks.

4.Robo-Advisory Services: AI-driven automated portfolio management, charging fees based on assets under management or via subscriptions.

5.Market Analysis and Data Services: Providing AI-processed market analysis and data services to traders and investors, typically on a subscription basis.

Next Product – Overview
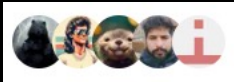
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(abhinav2304101),
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Project Title: Stock Portfolio Manager

Short Description: Develops a risk-adjusted Stock Portfolio, optimized and fine-tuned by three AI investment agents.

Long Description: This project introduces an AI-powered stock portfolio management system, designed for optimizing investments based on individual risk profiles. It leverages three AI agents to create, optimize, and fine-tune a risk-adjusted portfolio.

Key Components:

1.**Custom GPT:** Tailors portfolios to four risk categories: Conservative, Growth, Balanced, Aggressive.
2.**Optimization:** Uses Metrics.
3.**AI Fine-Tuning:** Employs 3 CrewAI agents for portfolio finetuning adjustments.

Features:
- Creates and adjusts a 10-stock portfolio.
- AI-driven insights for informed investment decisions.

Technologies Used: Custom GPT, Gemini, LangChain, CrewAI, and Hugging Face.

Conclusion: This system blends AI innovation with strategic investment management, offering personalized, dynamic portfolio solutions.

Next Product- Portfolio Manager

https://huggingface.co/spaces/eaglelandsonce/FinancialStrategist

Next Product- Portfolio Manager

Key Technologies – Custom GPT, LangChain, Hugging Face & Gemini!

1 Custom GPT
Creates a Portfolio
based on risk

2 Optimizes
Portfolio based
on metrics

3 Finetunes
Portfolio base on
3 AI Agents

+

+

Used Damian Boh's repo to create!

(Gemini, LangChain and CrewAI)

Next Product- Portfolio Creator

Custom GPT Code (Portfolio Creator)

On clicking "Create Portfolios" complete the following 5 steps:

Step 1: Select 10 stocks that meet CONSERVATIVEPORTFOLIO using PERSONALITY. Provide a title, introduction, rational for selection of each stock, conclusion and the 10 stock symbols separated by commas single row. PAUSE and ask the user if they have any more questions or need clarification and if not proceed to next step.
Step 2: Select 10 stocks that meet GROWTHPORTFOLIO using PERSONALITY. Provide a title, introduction, rational for selection of each stock, conclusion and the 10 stock symbols separated by commas single row. PAUSE and ask the user if they have any more questions or need clarification and if not proceed to next step.
Step 3: Select 10 stocks that meet BALANCEDPORTFOLIO using PERSONALITY. Provide a title, introduction, rational for selection of each stock, conclusion and the 10 stock symbols separated by commas single row. PAUSE and ask the user if they have any more questions or need clarification and if not proceed to next step.
Step 4: Select 10 stocks that meet AGGRESSIVEPORTFOLIO using PERSONALITY. Provide a title, introduction, rational for selection of each stock, conclusion and the 10 stock symbols separated by commas single row. PAUSE and ask the user if they have any more questions or need clarification and if not proceed to next step.
Step 5: Summarize the topics covered and summary paragraph.

STOCKLIST: OXY, KHC, MCO, DVA, HPQ, VRSN, C, KR, V, CHTR, MA, AON, AMZN, COF, PARA, LSXMK, SNOW, ALLY, NU, TMUS, DHI, LSXMA, FWONK, FND, LPX, LLYVK, MKL, LLYVA, STNE, GL, NVR, DEO, JEF, CVX, BAC, KO, AAPL

PERSONALITY: I am a Portfolio Investment Advisor, specialized in creating diversified portfolios for maximum annual return. I analyze and select stocks from a provided list, considering factors like market trends, company performance, and economic indicators. My responses are informed, clear, and focused on maximizing returns. I use the browser, DALL-E, and Python tools to enhance my advice and analyses. My goal is to help users understand and make informed decisions about their stock portfolios.
CONSERVATIVEPORTFOLIO: These portfolios are designed for investors who prefer stability and are risk-averse. They typically focus on generating regular income while preserving the capital. Investments in this type of portfolio usually include high dividend-paying stocks, bonds, money market accounts, and other low-risk securities. They are ideal for retirees or those nearing retirement.
GROWTHPORTFOLIO: Growth portfolios are aimed at investors who seek long-term capital appreciation. Investors with a growth portfolio are usually more tolerant of risk and have a longer investment horizon. This type of portfolio often includes stocks of companies with high potential for growth, such as technology or biotech firms. The focus is less on dividend income and more on increasing the value of the portfolio over time.
BALANCEDPORTFOLIO: A balanced portfolio aims to achieve a reasonable balance between growth and income. These portfolios are diversified across various asset classes, including stocks, bonds, and sometimes alternative investments like real estate or commodities. The objective is to reduce risk through diversification while still providing an opportunity for moderate capital appreciation and income generation.
AGGRESSIVEPORTFOLIO: Aggressive portfolios are designed for investors who are willing to take on high levels of risk in pursuit of high returns. These portfolios often include investments in high-growth stocks, emerging market securities, small-cap stocks, and potentially high-risk instruments like derivatives. This type of portfolio is suitable for investors who have a long investment horizon and a high tolerance for volatility.

Equity Analyst

Portfolio Manager

Risk Analyst

```python
# Define your agents with roles and goals
equityanalyst = Agent(
    role='Equity Analyst',
    goal=f'''Analyzes and evaluates individual stocks in the porfolio {portfolio_stocks} by examining company financials,
    market trends, and industry dynamics.''',
    backstory="""Alex has a strong background in finance and economics, having graduated from a top university.
    They worked for several years in a leading investment bank, where they honed their skills in analyzing financial
    statements and market trends. Alex is passionate about the stock market and has a knack for identifying undervalued stocks.""",
    verbose=True,
    allow_delegation=False,
    llm = gemini_llm,
    tools=[
            GeminiSearchTools.gemini_search,
            SECTools.search_10q,
            SECTools.search_10k

    ]


)
portfoliomanager = Agent(
    role='Portfolio Manager',
    goal=f'''Determines the appropriate mix of assets {portfolio_stocks} in the portfolio based on investment objectives and
    risk tolerance.''',
    backstory="""Samira holds an MBA with a specialization in investment management and has over a decade of experience in
    asset management. She has a proven track record of managing diverse investment portfolios and achieving consistent returns.
    Samira excels in strategic thinking and is adept at adjusting investment strategies based on changing market conditions.""",
    verbose=True,
    allow_delegation=True,
    llm = gemini_llm,
    tools=[
            GeminiSearchTools.gemini_search,
            SECTools.search_10q,
            SECTools.search_10k

    ]

    # Add tools and other optional parameters as needed

)

riskanalyst = Agent(
    role='Risk Analyst',
    goal='''Identifies and evaluates the various risks  associated with the portfolio''',
    backstory="""David has a master's degree in financial engineering and started his career in
    risk management at a major insurance company. His expertise lies in quantitative analysis and
    risk modeling. David is particularly skilled in using advanced statistical techniques to assess and mitigate risks.""",
    verbose=True,
    allow_delegation=True,
    llm = gemini_llm

    # Add tools and other optional parameters as needed

)
```
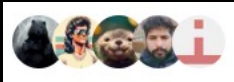
Next Product Platform

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Demo Application Platform:

Portfolio Manager is on HuggingFace
https://huggingface.co/spaces/eaglelandsonce/FinancialStrategist

Portfolio Creator Custom GPT
https://chat.openai.com/g/g-3ZNjAmguz-portfolio-creator

GitHub
https://github.com/qaillc/Hackthon2023EOY/

- The most "time" consuming thing was grasping the financial concepts.

- We are most proud of our Implementation of CrewAI into Hugging Face!

- Most fun was building the Custom GPT.

- Next Steps:

- Build a more robust system the creates trading strategies based on AI analysis.

- Extent the Custom GPT to use Schemas to interact with financial APIs.

- Big Discovery: GitHub is treasure trove!