

CODECELL-CMPN, VESIT

SIRIUS HACKATHON 2025

Category Code: C2

Problem Statement Title: Tax Optimization & Harvesting Assistant

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Institute Name: Vivekanand Education Society's Institute of Technology



Idea / Approach details (& implemented features)

Idea: AI-powered tax optimization assistant for real-time **tax-loss harvesting** & portfolio efficiency.

Problem: Investors face complex tax rules & manual portfolio adjustments

Solution: AI automates tax-saving strategies & ensures compliance.

Approach:

Real-Time Portfolio Analysis

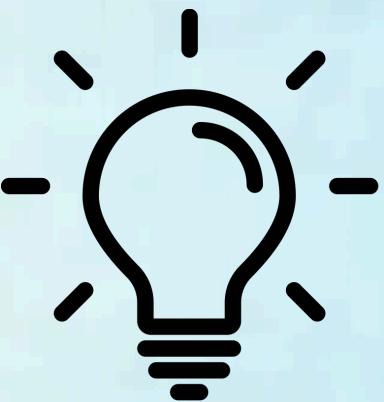
- Continuously monitors an investor's holdings.
- Ensures timely data synchronization for accurate decision-making.

IRS Rule Compliance

- Automates Wash-Sale Rule enforcement (prevents repurchasing the same security within 30 days).
- Uses RAG Query Node to fetch IRS regulations dynamically.

AI-Powered Trade Recommendations

- Suggests alternative securities to maintain portfolio exposure while selling loss-making assets.
- Leverages historical data & AI models to improve recommendation accuracy.



Innovation (Showstopper)

Manual Process vs. Automated Process

This slide depicts the manual versus automated processes. It also shows the number of resources uses to perform each task along with its costs before and after implementing RPA.

	Time	Workforce	Tasks	Costs
Manual Process	2-4 Hours	10-15 Employees	Client Information Update	\$250 Millions
	1-2 Hours	15-17 Employees	Taking Orders	\$450 Millions
	7-8 Hours	30-40 Employees	Packaging	\$800 Millions
RPA Process	Time	Workforce	Tasks	Costs
	30 Minutes- 60 Minutes	5 Employees	Client Information Update	\$100 Millions
	15-30 Minutes	5-7 Employees	Taking Orders	\$150 Millions

Number of employees decreased to 10%-20% to perform each task

Time consumption reduced to 75%

Costs reduced to 50%



Key differentiator:

- Continuous, real-time tax-loss detection (not just quarterly).
- Fully automated wash-sale rule compliance—no manual checks needed.
- Scenario simulation: Investors can preview tax impacts before trading.

Showstopper:

- "Turns complex tax rules into plain-language, real-time actions—saving time and money effortlessly."



Tech Stack

Uptiq AI Workbench Architecture

🔍 Real-Time Tax-Loss Detection

- Financial Data GatewayLive portfolio pricing retrieval
- Integrated brokerage account synchronization
- JavaScript NodeCustom loss identification logic
- Dynamic price comparison engine

🛡 Wash-Sale Rule Compliance

- Ruleset NodeAutomated IRS regulation enforcement
- 30-day trade restriction mechanism
- Table NodeTransaction history tracking

🧠 AI-Powered Recommendations

- RAG Query NodeExtensive tax regulation knowledge base
- Tax-efficient security identification
- Prompt NodeActionable investment insights generation
- Personalized tax optimization advice

🔬 Additional Technologies

- Cloud-based financial data APIs
- Secure, encrypted transaction database
- Real-time computational analysis



Implementation/Prototype/Use Case Diagram

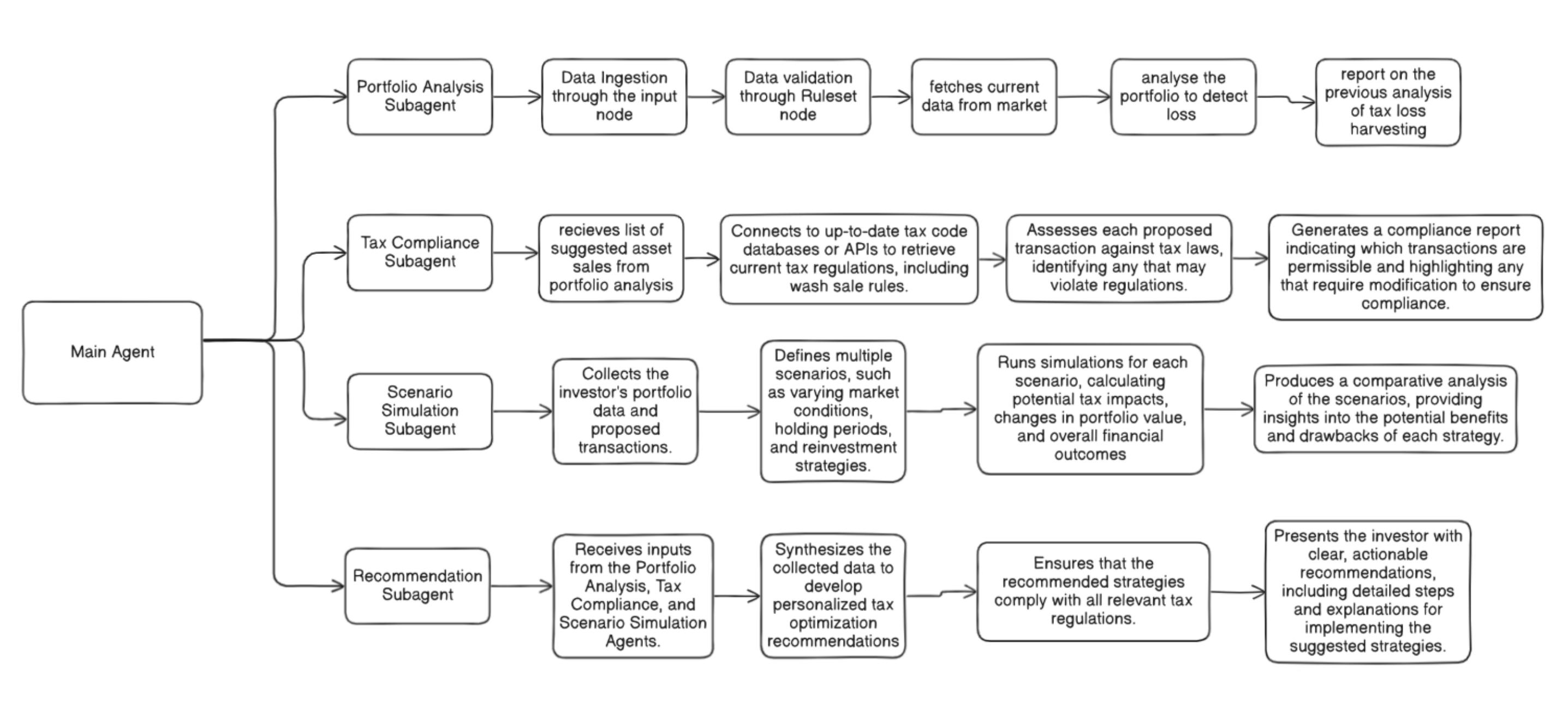


FIGURE 1: UPTIQ WORKFLOW IDEA

System Architecture

Main AI Agent:

- Controls Portfolio Analysis, Tax Compliance, Scenario Simulation, and Recommendation Agents.
- Integrates real-time APIs for stock data and tax regulations.

Sub-Agents:

- Portfolio Analysis Agent: Tracks stock prices, detects losses, and evaluates performance.
- Tax Compliance Agent: Ensures adherence to financial regulations and identifies tax violations.
- Scenario Simulation Agent: Simulates market conditions (bullish/bearish trends).
- Recommendation Agent: Provides AI-driven investment strategies.



Workflow Diagram

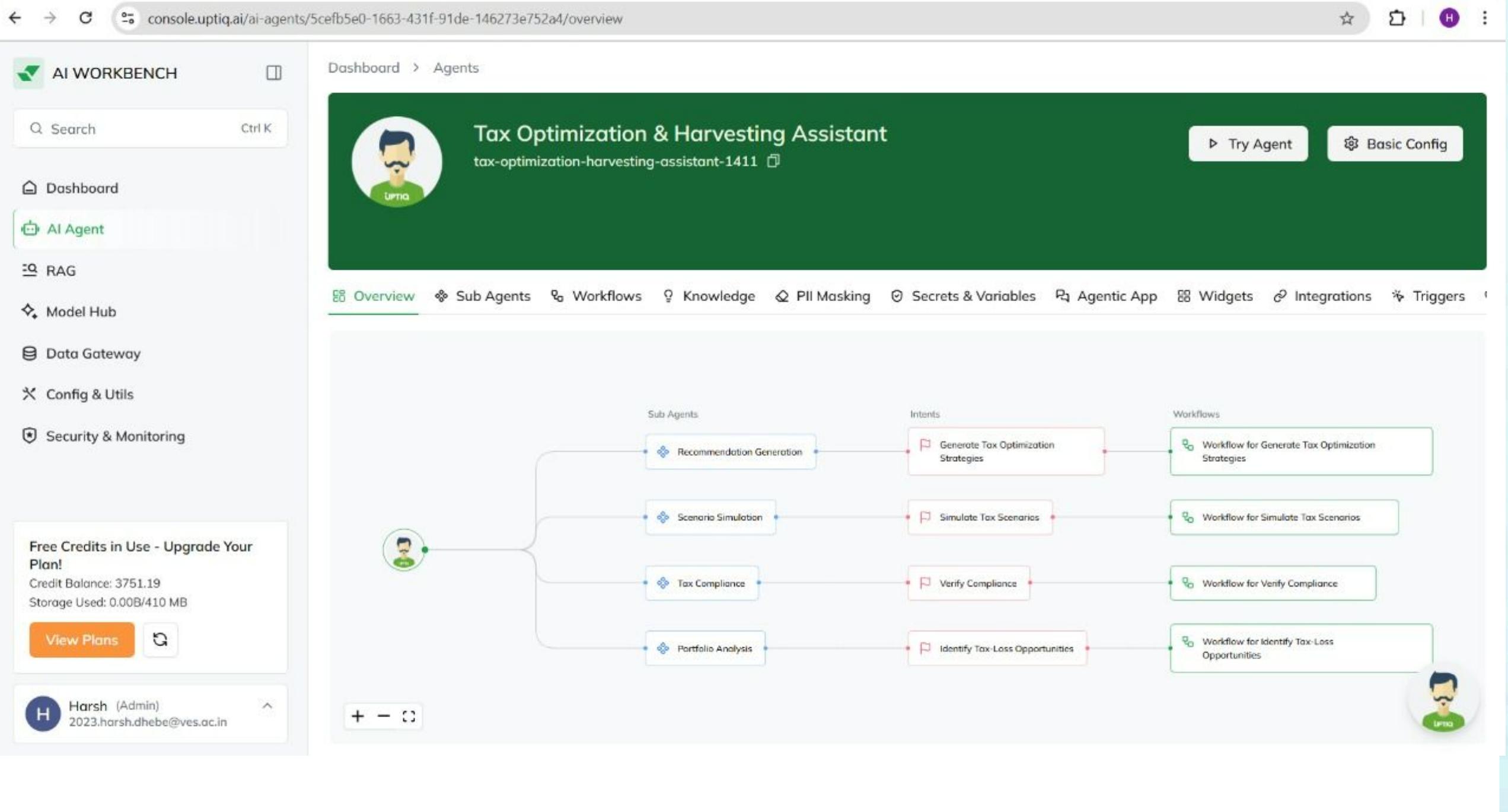


FIGURE 2: UPTIQ WORKFLOW

Data Flow & Processing

- Data Ingestion: Fetches market and portfolio data via APIs.
- Validation: Ensures accurate, tax-compliant data processing.
- Portfolio Analysis: Identifies risks, losses, and growth opportunities.
- Tax Compliance: Flags potential tax violations and optimizes tax strategies.
- Scenario Simulation: Predicts market trends under different conditions.
- Recommendations: AI-driven suggestions for portfolio adjustments.



Subagent workflow



Figure 3: Subagent Diagram

Subagent workflow

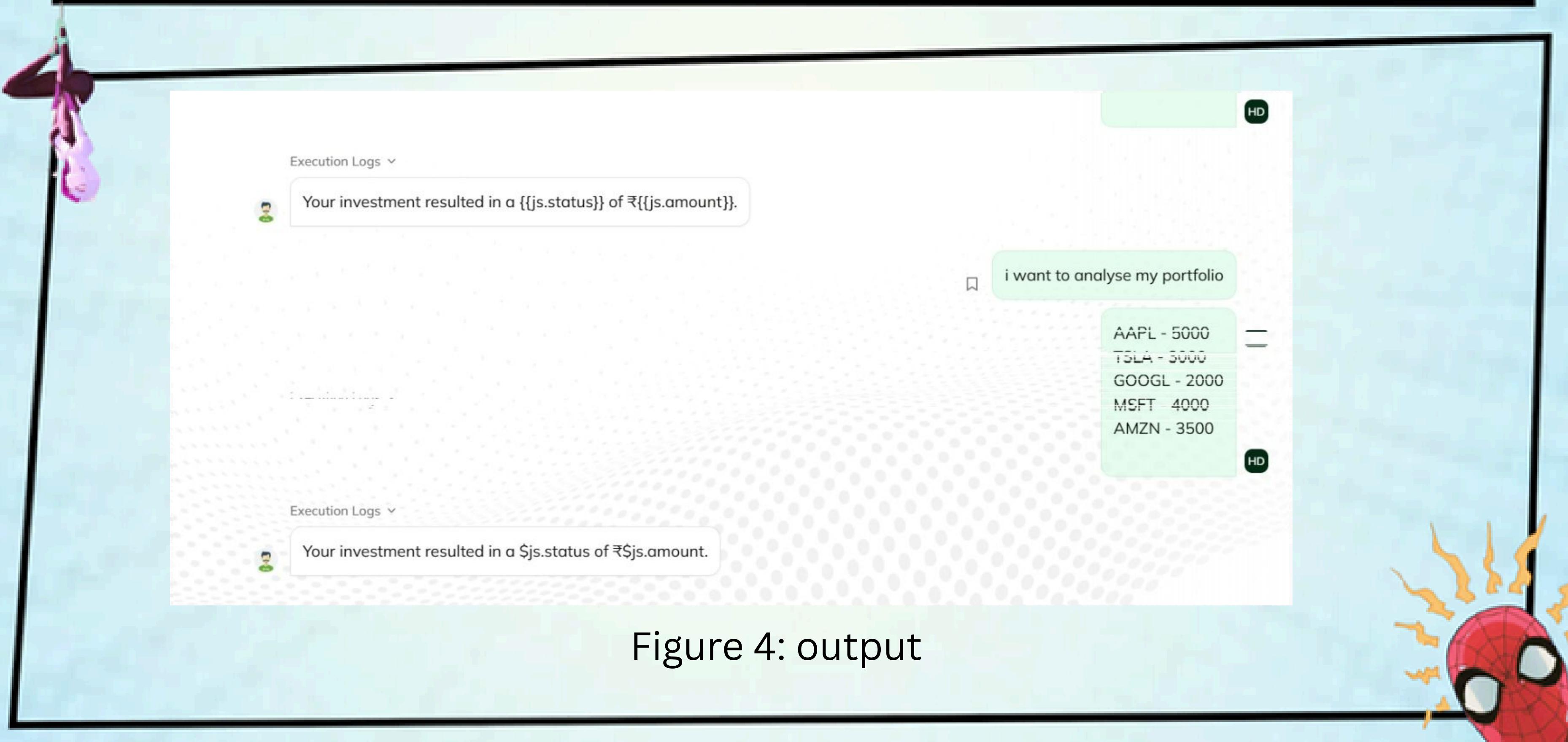


Figure 4: output

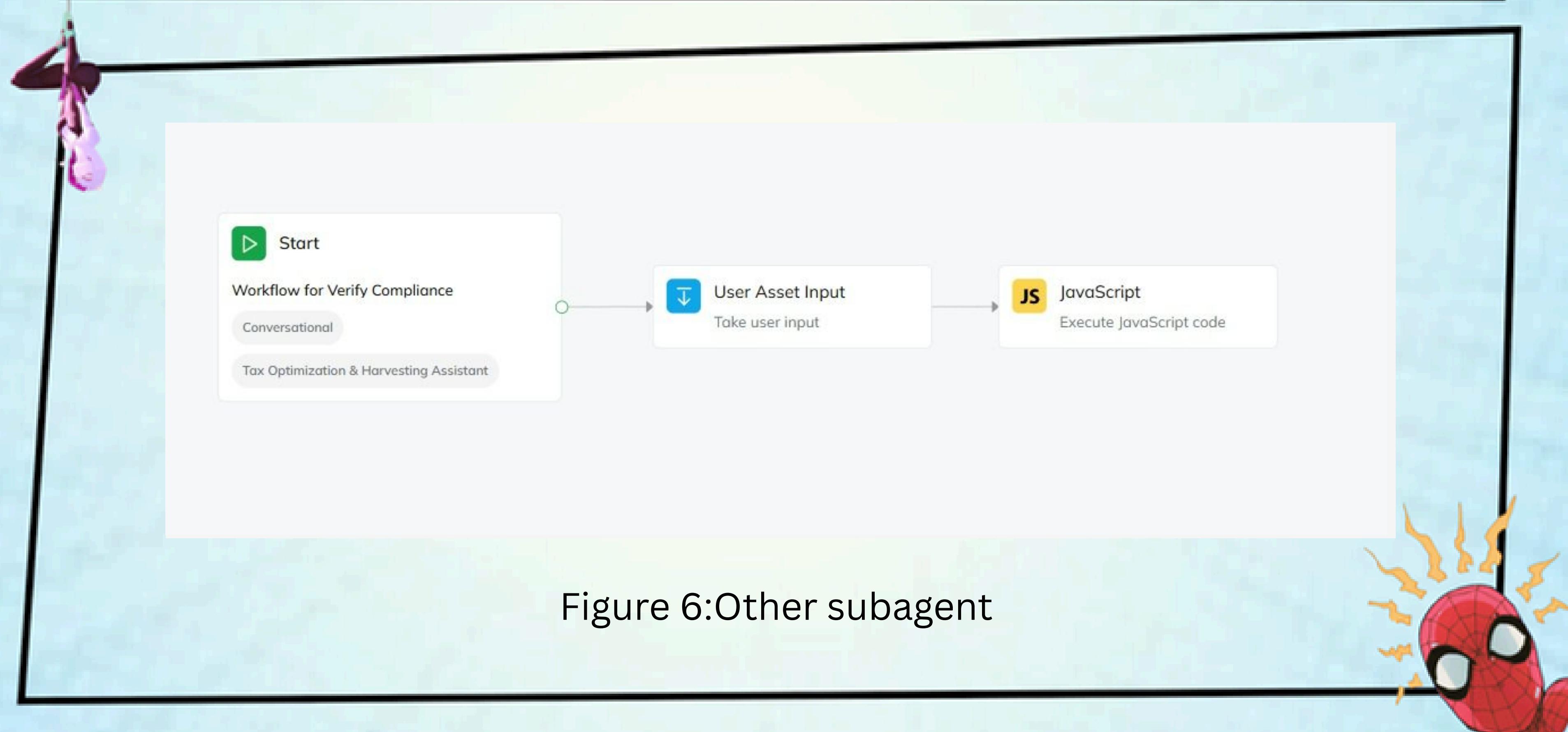
Subagent workflow

Execution Logs X

- Input** View Details ↗
Started on Mar 28, 8:48 PM for 5714 milliseconds
Asked user for input. User: <p>AAPL - 5000 </p><p>TSLA - 3000 </p><p>GO
OGL - 2000 </p><p>MSFT - 4000 </p><p>AMZN - 3500 </p><p></p>
- Ruleset** View Details ↗
Started on Mar 28, 8:48 PM for 61 milliseconds
Applied a ruleset: Portfolio Validation Rules
- API Call** View Details ↗
Started on Mar 28, 8:48 PM for 425 milliseconds
Made an API call to <https://www.alphavantage.co/query>
- JavaScript** View Details ↗
Started on Mar 28, 8:48 PM for 119 milliseconds
Executed a custom code: JavaScript
- Display** View Details ↗
Started on Mar 28, 8:48 PM for 191 milliseconds
Displayed a message: <p>Your investment resulted in a \$js.status of ₹\$js.amo
unt.</p>

Figure 5: Execution

Subagent workflow



In case of Uptiq category - Your Uptiq Agent (explain in detail)

Uptiq Agent: Tax Optimization Assistant

Role: Acts as an AI-powered financial co-pilot for investors and advisors.

Detailed Functionality:

- Real-Time Monitoring: Uses Financial Data Gateway to pull live prices and portfolio data.
- Loss Detection: JavaScript Node runs logic (e.g., if `currentPrice < purchasePrice` → flag loss).
- Compliance Enforcement: Ruleset Node checks IRS wash-sale rules; Table Node logs sale timestamps.
- Smart Recommendations: RAG Query Node fetches tax rules and alternatives; Prompt Node delivers advice like "Sell X to save \$Y, buy Z instead."



Future Objectives

- Enhanced machine learning models
- More sophisticated tax strategies
- Advanced predictive analytics
- Autonomous investment ecosystem
- Scale to financial advisors and robo-advisory platforms.

