

1. Overview

This multi-agent system is designed to automate the analysis of financial data using large language models (LLMs) and Python code execution. It processes CSV datasets, performs trend analysis, evaluates risk, and identifies potential investment opportunities, saving results as text files.

2. Agents and Their Roles

Agent Name	Type	Role
code_executor_agent	ConversableAgent	Executes Python code in a sandboxed environment.
trend_analysis_agent	AssistantAgent	Analyzes CSV data using pandas/numpy and generates trend insights.
risk_assessment_and_opportunity_identification_agent	AssistantAgent	Evaluates investment risks and opportunities based on prior report.

3. Communication Mechanism

- Agents interact using the `initiate_chat` method from AutoGen.
 - `code_executor_agent` acts as an execution environment to run scripts produced by the assistant agents.
 - Output is passed between agents using file-based communication:
 - `trend_analysis_report.txt` (produced by `trend_analysis_agent`)
 - `risk_assessment_and_opportunities.txt` (produced by `risk_assessment_and_opportunity_identification_agent`)
-

4. Data Sources

- All data resides in the `data/` directory as CSV files.
 - Files are copied to the working directory (`coding/`) before analysis.
-

5. Technologies Used

- Language Models:** Groq API with llama3-70b-8192
- Libraries:** pandas, numpy

- **Execution:** LocalCommandLineCodeExecutor from AutoGen
 - **Environment Management:** Python + dotenv for secure API key handling
 - **File Handling:** Python shutil and os libraries
-

6. System Diagram

