Market Intelligence Automation System
Automated Industry Analysis Platform

Project Overview

The objective of this project was to design and implement a fully automated system capable of generating industry intelligence reports based on a high-level query. These reports provide valuable insights to company leadership by identifying market trends, competitors, and strategic opportunities with minimal human intervention.

Problem Statement

Currently, generating such reports involves manual effort across research, data gathering, analysis, and writing. Our goal was to automate this end-to-end pipeline using artificial intelligence and modular software design principles.

System Workflow Summary

We designed a modular and scalable architecture that includes the following key components:

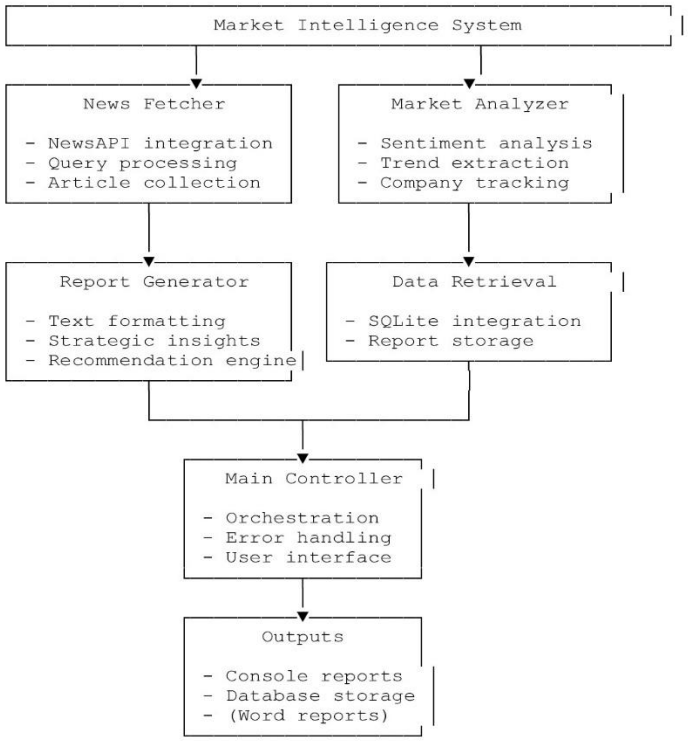
- **User Query Input: Accepts high-level prompts like "Generate a strategy intelligence report for the electric vehicle market and its key players."**
- **Prompt Engineering (Zero-shot prompting): Carefully crafted prompts are used to guide AI models to understand tasks, enabling zero-shot learning for flexible querying.**
- **Data Gathering Module: Uses news/article scrapers, company databases, and industry feeds to collect relevant content.**
- **Data Storage (Optional Caching): A local or remote database stores collected documents for reusability and avoids redundant scraping, improving performance.**
- **Trend & Sentiment Analyzer: Uses NLP techniques like topic modeling and sentiment analysis to extract emerging insights.**
- **Competitor Analysis Module: Extracts and ranks key players, market share information, and strengths/weaknesses.**

- **Report Generator: Assembles the final structured report in sections like Market Overview, Competitor Landscape, and Strategic Recommendations.**
- **Output Formatter: Produces readable documents (PDF, Word, or Markdown)**

Key Implementation Choices

- **Prompt Engineering & Zero-Shot AI Use: Instead of training models, we used LLMs like ChatGPT with carefully designed prompts to perform tasks in zero-shot mode, enabling rapid adaptation to new topics.**
- **Modular Pipeline: Each stage (e.g., scraping, analysis, writing) was developed as a standalone module, enabling reusability and parallelism.**
- **Data Reusability with Caching: We created a mechanism to separate the document retrieval from analysis. This prevents re-fetching the same data every run and reduces load times.**
- **Workflow Diagram: A visual workflow (created and included) summarizes the pipeline and illustrates the system architecture clearly for stakeholders.**

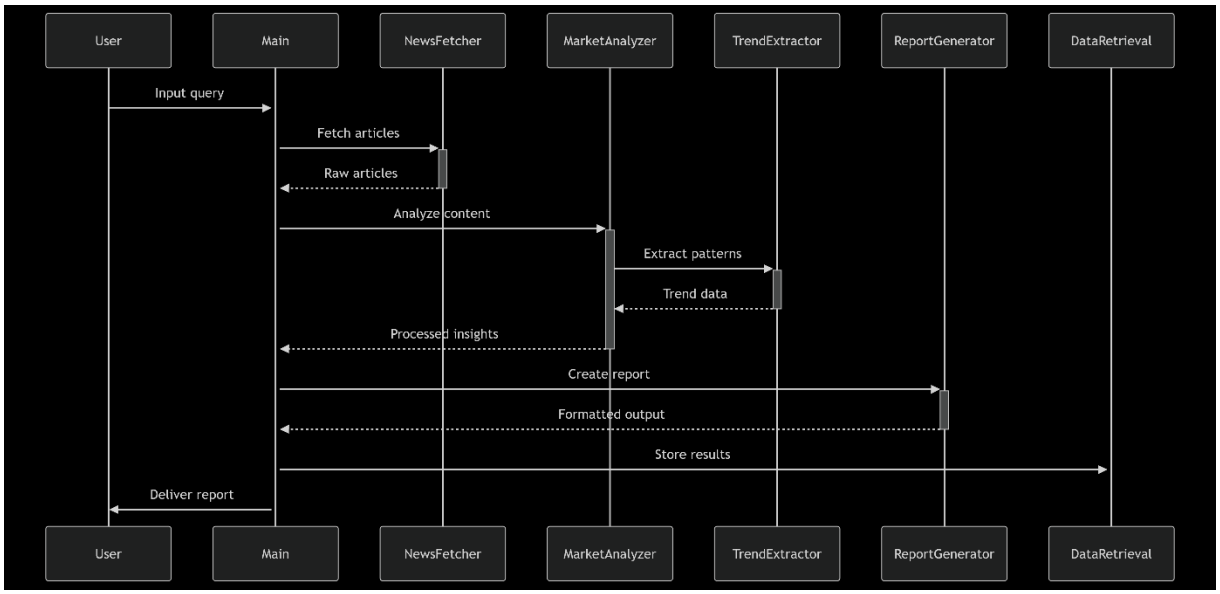
System Architecture Diagram



Prompt Engineering

- Dynamic query expansion (e.g., "EV market" → searches for companies + technologies)
- Sentiment classification thresholds (polarity > 0.1 = positive)
- Trend extraction using:
    - Custom stopword filtering
    - N-gram analysis (1-2 word phrases)

Technical Implementation



Database Optimization

- Separate database_creation.py ensures:
    - Single schema initialization
    - Prevents table recreation on each run
    - Enables historical analysis (all reports stored with timestamps)

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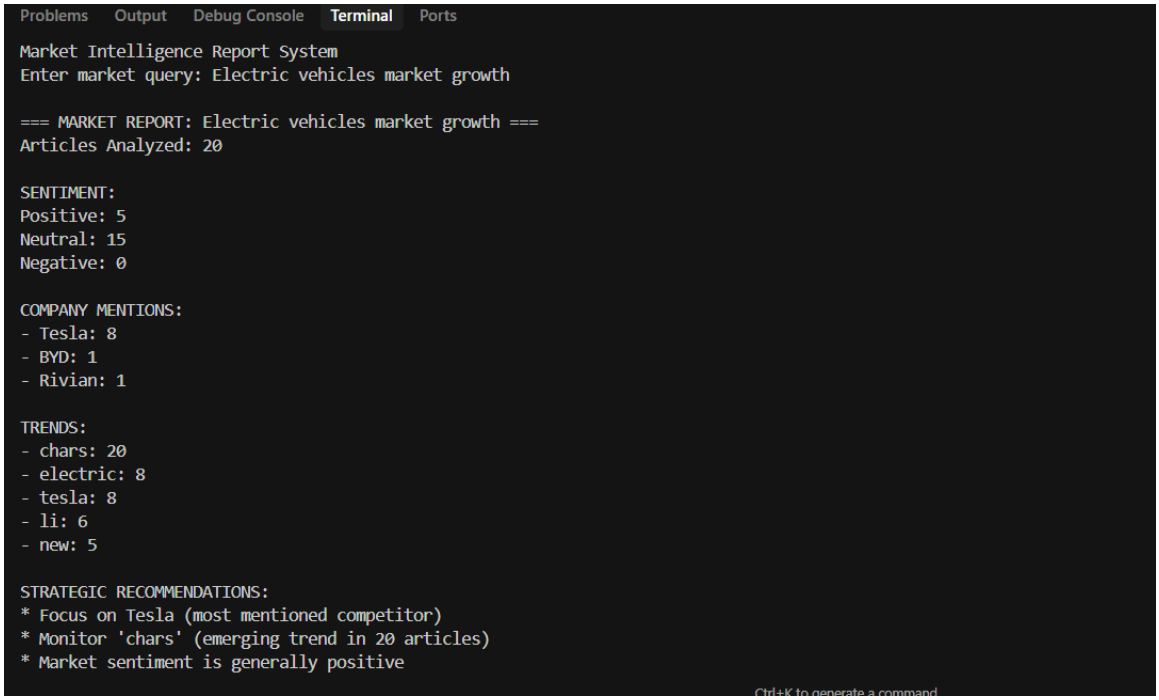
5. Output Sample (Electric Vehicle Market)

Our final report output on the electric vehicle (EV) market included:

- **Market Trends: EV adoption rates, government incentives, battery cost dynamics.**
- **Competitor Analysis: Tesla, BYD, Rivian, and legacy automakers like Ford and GM.**
- **Strategic Recommendations: Invest in battery tech, consider partnerships with Asian OEMs, watch regulatory signals in Europe.**



Conclusion This project demonstrates the feasibility and scalability of an autonomous system for industry intelligence report generation. It blends AI (zero-shot LLMs), NLP, and automation to significantly reduce the time and cost of strategic research.