**Automating-Competitor-Tracking-with-AI Documentation**

**Project Overview**:

This project leverages AI and automation to track and analyze competitors in real time across multiple channels. The system gathers data from GitHub commits, job postings, app reviews, and pricing pages, synthesizes this information, and presents it in a Notion dashboard. The solution is fully automated using AI models, making it cost-effective and efficient for competitors' insights.

**1. Project Goals:**

* **Competitor Intelligence**: Automate the collection of data from multiple sources to analyze competitor activities.
* **AI-Powered Summarization**: Use AI to synthesize collected data into meaningful insights and daily summaries.
* **Data Automation**: Automate the data gathering, processing, and presentation using tools like Notion, n8n, and AI models.
* **Dashboard Visualization**: Present key insights through a Notion dashboard, with customizable views for different datasets (GitHub, job postings, reviews, pricing).

**2. Technologies and Tools Used:**

* **Notion API**: For fetching and storing competitor data.
* **AI Models (BART for summarization)**: For processing large datasets into meaningful summaries.
* **n8n**: For automating the workflows, such as fetching data, updating databases, and processing.
* **BeautifulSoup & Requests (Web Scraping)**: For scraping job postings and competitor data.
* **Python**: For backend automation, data fetching, summarization, and interaction with APIs.

**3. Data Sources:**

* **GitHub Commits**: Monitor competitors’ GitHub repositories for updates on development speed and new features.
* **Job Postings (via Web Scraping/Indeed API)**: Track job postings to gauge strategy shifts in competitors' teams.
* **App Reviews**: Analyze customer feedback to identify potential weaknesses or opportunities in competitors' products.
* **Pricing Pages**: Scrape competitor pricing pages to monitor changes in pricing strategies.

**4. System Workflow:**

1. **Data Collection**:
   * Data is collected from multiple sources:
     + GitHub Commits via the GitHub API.
     + Job postings from platforms like Indeed.
     + App reviews from app stores or scraping.
     + Pricing details from competitors’ websites via web scraping.
2. **Data Storage**:
   * All data is stored in a Notion database for easy retrieval and organization.
   * Notion is used as both the storage medium and the presentation platform.
3. **AI Summarization**:
   * Large chunks of data are summarized using an AI model (e.g., Facebook's BART or GPT-3).
   * The summaries are created on a daily basis to provide fresh insights to users.
4. **Automation**:
   * n8n orchestrates the entire process, ensuring that the data is fetched, processed, and stored without manual intervention.
   * Workflows are triggered automatically to perform tasks such as updating job listings, GitHub commits, and app reviews.
5. **Visualization**:
   * The processed data is displayed on a Notion dashboard.
   * Different views are used, such as tables and timelines, to represent job postings, GitHub commits, app reviews, and pricing analysis.

**5. Key Features:**

* **Automated Data Collection**: Data from multiple sources (GitHub, Job Postings, Reviews, Pricing) is fetched and stored automatically.
* **AI-Powered Insights**: AI synthesizes the collected data into actionable insights and daily summaries.
* **Notion Dashboard**: Provides a clear, visual representation of the competitor data and insights in a user-friendly interface.
* **Data Visualization**: Use of charts and tables to present the data clearly in Notion.

**6. Code Walkthrough:**

1. **GitHub Commit Monitoring**:
   * The **monitor\_commit.py** script fetches commit data from GitHub repositories.
   * It calculates the frequency of commits and tracks changes over time.
   * The data is stored in the Notion database.
2. **Job Posting Tracker**:
   * The **job\_posting\_tracker.py** script scrapes job postings from sources like Indeed.
   * The data is categorized by job title, company, location, and required skills.
   * This data is then pushed to the Notion database.
3. **App Review Analyzer**:
   * **review\_analyzer.py** scrapes app store reviews of competitor products.
   * Sentiment analysis and feedback classification are performed to extract key insights.
   * These insights are stored in the Notion database.
4. **Pricing Page Scraper**:
   * **pricing\_scraper.py** collects competitor pricing data from their websites.
   * It compares changes in pricing over time and provides recommendations.
   * The scraped data is then inserted into the Notion database.
5. **AI Summarization**:
   * The **ai\_synthesis.py** script uses the BART model for summarizing the data.
   * It processes the collected data from all sources and generates daily summaries.
   * The summaries are added to Notion as a daily summary page.
6. **Notion Integration**:
   * The **notion\_integration.py** script handles interactions with the Notion API.
   * It pushes all the data (GitHub commits, job postings, reviews, pricing) into the respective Notion database.
7. **n8n Workflow Automation**:
   * **n8n workflows** automate the process of fetching data, processing it, and updating the Notion dashboard.
   * The workflows are triggered at regular intervals to ensure real-time data updates.

**7. Dashboard:**

The final **Notion Dashboard** provides a comprehensive overview of competitor activities. The following views are implemented:

* **GitHub Commit History**: Displays the frequency and types of commits made by competitors.
* **Job Postings**: Shows the latest job postings from competitors, with filters for role, location, and skills.
* **App Reviews**: Analyzes the feedback from customers regarding competitor apps, with sentiment analysis and keyword extraction.
* **Pricing Analysis**: Tracks changes in pricing strategies across competitor products.

The dashboard is designed to be easy to navigate, with filtered views for different datasets (GitHub, job postings, reviews, pricing).

**8. Results:**

* **Real-Time Competitor Insights**: With AI-generated summaries and a dynamic dashboard, you can quickly gauge competitors' strategies.
* **Automated Workflow**: Everything from data collection to dashboard updates is automated, reducing manual effort.
* **Affordable Solution**: This entire system operates at a fraction of the cost of traditional competitor intelligence tools.

**9. Conclusion:**

This project successfully automates competitor tracking and provides valuable insights using AI, automation, and data visualization. The Notion dashboard is an effective tool for presenting these insights clearly and concisely, enabling businesses to stay ahead of the competition.

**10. Future Improvements:**

* **More Data Sources**: Integrating more competitor data sources, such as social media mentions or product reviews from other platforms.
* **Advanced AI Models**: Using more advanced models or fine-tuning existing models for better summarization and insights.
* **Enhanced Visualizations**: Adding more interactive charts and graphs to the Notion dashboard.

**Appendix:**

* **Code Repositories**: Links to the GitHub repositories where the code is hosted.
* **API Documentation**: Details on how the Notion API is integrated, with API keys and access details.
* **Example Outputs**: Screenshots or examples of the Notion dashboard and AI summaries.