SEO Keyword AI Agent Planning and Development

Objective:
To build an SEO Keyword Research AI Agent that takes a single seed keyword as input and suggests 50 optimized keyword candidates. These keywords are selected to rank on the first page of Google, based on low competition, high search volume, and current search trends.

Reasoning behind choosing such a development plan-

- Gemini LLM is used to generate 100–120 keyword suggestions from a single seed keyword.
- Gemini is prompt-tuned to focus on:
    1. Low competition
    2. High/medium volume
    3. Relevance to the topic
- Google Trends is used to fetch trend score over the last 12 months
- SerpAPI is used to Estimate realtime Search Volume & Competition.
- Gemini is again used to Judge Rankability, only "Yes" keywords are considered "rankable."
- Sorting:
    1. High search volume
    2. Low competition
    3. High trend score
- Filtering:
    1. Volume > 10,000
    2. Competition < 10
    3. Marked as "rankable" by Gemini

Future development-

- Use of Vector Database like Chroma.
- Implement a RAG pipeline that uses a vector store to retrieve relevant SEO documents before prompting the LLM.
- Automate the entire workflow using n8n.
- Use it in the creation of SEO Blogpost AI Agent.

Workflow Overview:

1. Input: User provides a seed keyword (e.g., “global internship”). 2. Keyword Generation: Gemini LLM generates 100–120 related keyword ideas using semantic understanding. 3. Trend Score: Google Trends API (via PyTrends) retrieves a 12-month average interest score for each keyword. 4. SEO Metrics: SerpAPI fetches estimated search volume and a proxy for competition (based on total results and organic listings). 5. Rankability Check: Gemini is prompted again to evaluate if a keyword is likely to rank on Google’s first page. 6. Filtering: - Search Volume > 10,000 - Competition < 10 - Marked as “Rankable” by Gemini 7. Sorting: - High search volume (descending) - Low competition (ascending) - High trend score (descending) 8. Output: Top 50 filtered and ranked keywords returned to user or exported.