DEVELOPMENT PLAN: KEYWORD RESEARCH AI AGENT (WITH N8N)

OBJECTIVE:
Build an AI Agent that takes a seed keyword (e.g., "Global internship") and outputs 50 keyword candidates sorted by low competition and high monthly search volume. The agent uses SEO data, LLM enrichment, and n8n automation to deliver actionable keyword suggestions.

DEVELOPMENT PHASES:

1. Data Collection

- Integrated Google, Bing, YouTube suggestions for raw keywords.
- Used Gemini API for enriching keywords with long-tail, semantically related terms.

2. Keyword Scoring & Filtering

- Develop a scoring function
- Sort all candidates by this score to prioritize low-competition, high-impact keywords.
- Filter top 50 keywords for final output.

3. Keyword Clustering & Relevance Check

- Use TfidfVectorizer to convert keyword phrases into numerical vectors
- Apply **KMeans clustering** (e.g., 5 clusters) to group similar keywords.

4. Automation with n8n

- Build an n8n workflow automating the entire pipeline:
    - Accept seed keyword input (manual or webhook).
    - Trigger API calls and data processing scripts.
    - Upload results to Google Sheets.
    - Send daily summary emails with top 10 keywords and sheet link.

5. Output & Reporting

- Store outputs in structured folders (raw, enriched, processed).
- Share results via Google Sheets for easy access and collaboration.

- Provide email reports with keyword highlights for quick decision-making.

6. Future Work: Evaluation & Iteration

- (To be implemented) Evaluate keyword effectiveness using tools like Google Search Console or SERP APIs.
- Refine scoring and filtering logic based on real-world results.
- **Reason:** Enables long-term adaptability to SEO trends and search algorithm updates.

JUSTIFICATION

This AI Agent combines reliable data sources, semantic expansion, statistical clustering, and visual automation. Using **Python** for computation, **Gemini API** for enrichment, and **n8n** for seamless execution makes it:

- **Accurate** in targeting relevant, rankable keywords
- **Efficient** in handling repetitive tasks
- **Scalable** for daily, real-world use