**Intelligent Web Query and Semantic**

Re-Ranking Flow using Brave and Google Gemini

**Workflow: Intelligent Web Query and Semantic Re-Ranking Flow**

Overview

This workflow is designed to:

1. **Integrate with a Free Brave Web Search API Key.**
2. **Receive search queries via a webhook.**
3. **Aggregate and re-rank web search results using advanced semantic analysis.**
4. **Respond back with the highest-ranked URLs along with their titles and descriptions.**

Components

1. **Setup and Documentation (Sticky Notes)**
   * **Sticky Note4:**  
     Provides instructions to set up a free Brave Web Search API key.  
     *Steps:*  
     a. Visit [api.search.brave.com](http://api.search.brave.com/)  
     b. Create an account  
     c. Subscribe to the free plan  
     d. Generate an API key  
     e. Update the “X-Subscription-Token” in your query nodes with your key.
   * **Sticky Note:**  
     Offers guidance on changing the input source (e.g., switching from a Webhook to another node) and adjusting the subsequent nodes accordingly.
2. **Time and Webhook Setup**
   * **Date & Time Node:**  
     Captures the current date and time, which is useful for time-sensitive queries.
   * **Webhook Node:**  
     Listens for incoming requests using a specified path (here, “962f1468-c80f-4c0c-8555-a0acf648ede4”) and responds with search results once processing is complete.
3. **Data Parsing and Preparation**
   * **Auto-fixing Output Parsers:**  
     There are two nodes dedicated to auto-fix and normalize the output data:
     + *Auto-fixing Output Parser6*
     + *Auto-fixing Output Parser*
   * **Structured Output Parser1:**  
     Parses output data into a structured JSON format with fields for reasoning summary and key ranked URLs.
   * **Query-1 Combined (Code Node):**  
     Aggregates title, URL, and description pairs from search results into a single output string for further processing.
4. **Processing and Re-Ranking**
   * **Semantic Search - Query Maker (Chain LLM):**  
     Uses a multi-step chain of thought to generate a refined search query based on the user's research question and context.  
     *Guidelines include:*
     + Breaking down the query to identify key terms.
     + Exploring context and potential sources.
     + Refining and outputting a final search query.
   * **Semantic Search - Result Re-Ranker (Chain LLM):**  
     Re-ranks web search results based on relevance to the refined query.  
     *Output:*
     + Ranked URLs (up to 10) with title, link, and description.
5. **Response and Integration**
   * **Respond to Webhook Node:**  
     Formats and returns the top-ranked results in JSON format. The JSON includes keys like Highest\_RANKEDURL\_1 through Highest\_RANKEDURL\_10 and an Information\_extracted field for additional insights.
   * **Additional Nodes (Optional):**  
     Nodes such as Merge or Aggregate might be used to combine data from different parts of the workflow for a comprehensive result.

Execution Flow

1. **Incoming Request:**  
   The webhook node receives a search query, triggering the workflow.
2. **Time Capture:**  
   The Date & Time node records the current timestamp to be used later in context-sensitive processing.
3. **Query Generation:**  
   The Semantic Search - Query Maker analyzes the user’s research question and, using a multi-step chain-of-thought process, generates a refined search query.
4. **Web Search Execution:**  
   A HTTP Request node (configured externally with the Brave API key) uses the refined query to perform a web search.
5. **Results Aggregation:**  
   The Query-1 Combined node consolidates the results (titles, URLs, and descriptions) from the web search.
6. **Re-Ranking:**  
   The Semantic Search - Result Re-Ranker processes and re-ranks the search results based on relevance and extracts key information.
7. **Output Formatting:**  
   The Structured Output Parser1 formats the re-ranked results into a defined JSON structure.
8. **Response:**  
   The Respond to Webhook node sends the JSON response back to the requester, containing the highest-ranked URLs and extracted information.

Benefits

* **Automated Query Refinement:**  
  Uses advanced AI chains to generate precise search queries based on user intent.
* **Dynamic Re-Ranking:**  
  Analyzes and re-orders search results to ensure the highest relevance.
* **Structured Output:**  
  Provides responses in a clear JSON format, ideal for further processing or integration with other systems.
* **User-Friendly Interaction:**  
  Enables users to send queries through a webhook and receive structured, actionable insights.