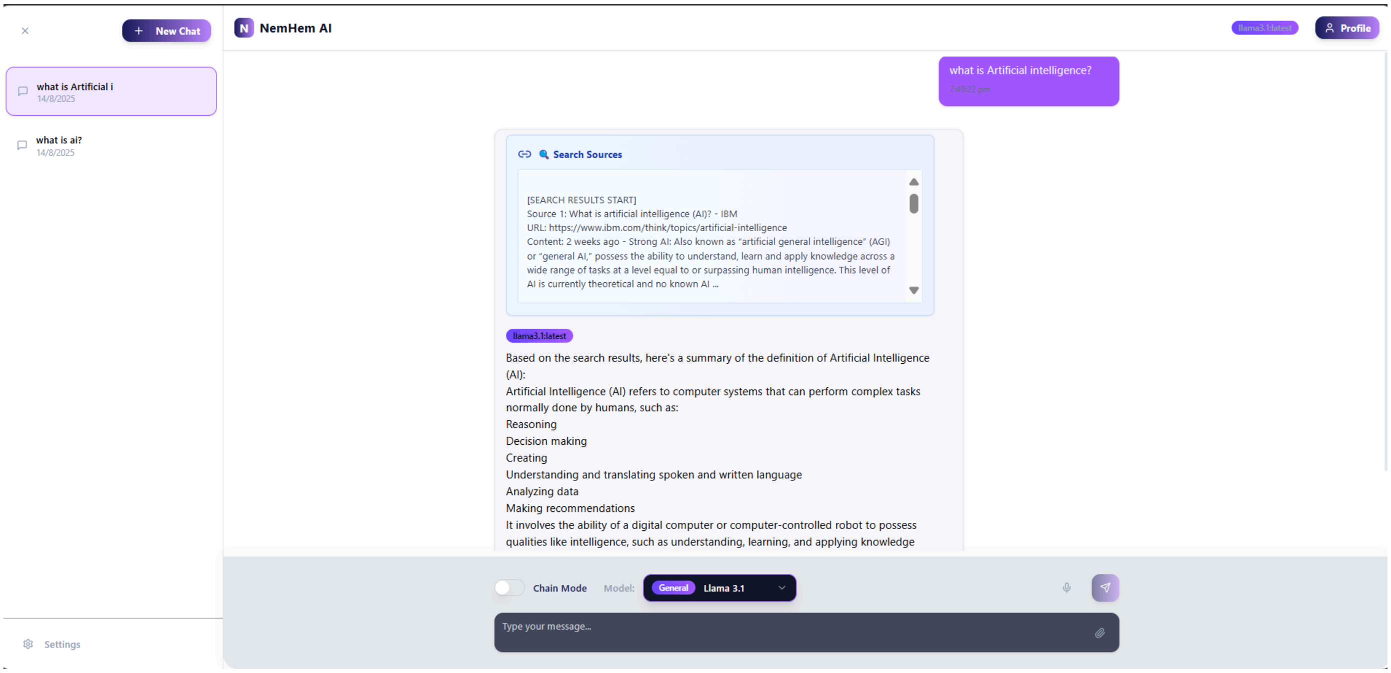
SearxNG Integration Implementation Report

Date: August 14, 2025
Project: Chatbot SearxNG Integration

Overview

Today I successfully integrated SearxNG search functionality into our chatbot application, making it work similar to Perplexity AI. The chatbot now automatically searches for relevant information before generating responses, providing users with source-backed, up-to-date answers.

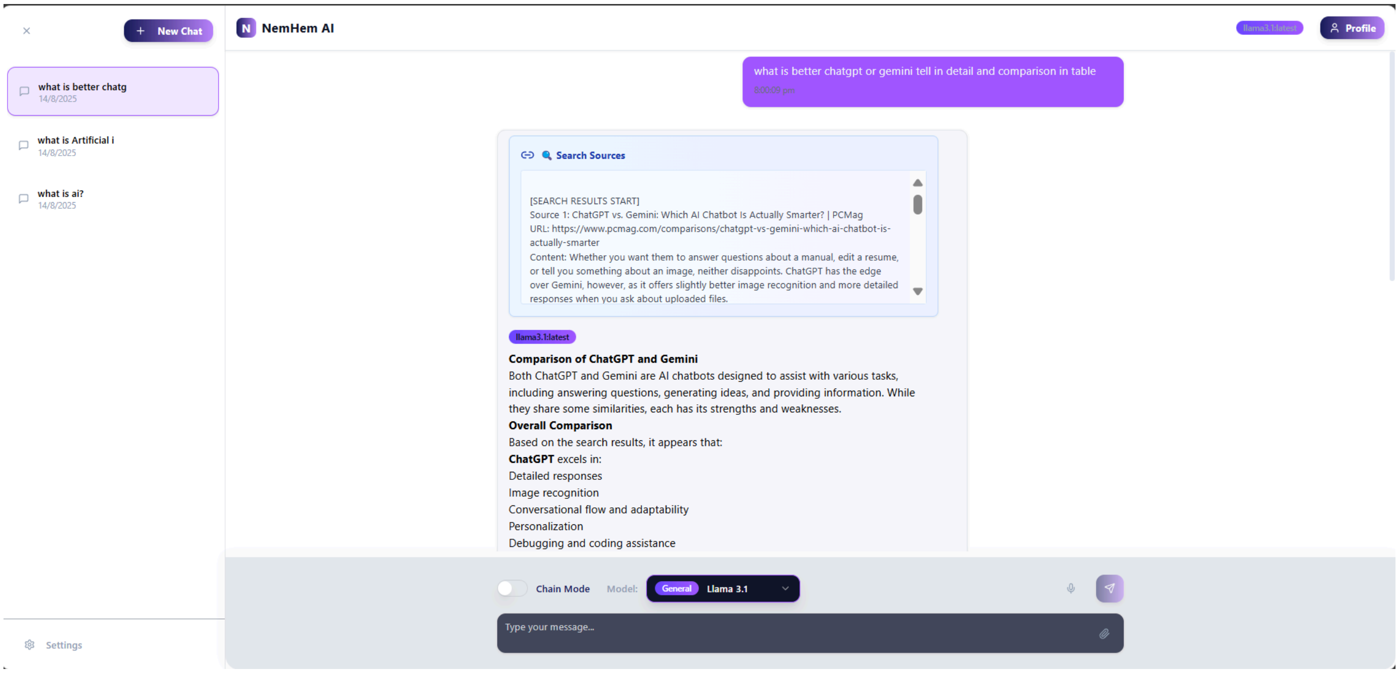
Output



what is Artificial intelligence?
7:49:22 pm

```
[SEARCH RESULTS START]
Source 1: What is artificial intelligence (AI)? - IBM
URL: https://www.ibm.com/think/topics/artificial-intelligence
Content: 2 weeks ago - Strong AI: Also known as “artificial general intelligence” (AGI)
or “general AI,” possess the ability to understand, learn and apply knowledge across a
wide range of tasks at a level equal to or surpassing human intelligence. This level of
AI is currently theoretical and no known AI ...
```

Based on the search results, here's a summary of the definition of Artificial Intelligence (AI):
Artificial Intelligence (AI) refers to computer systems that can perform complex tasks normally done by humans, such as:
Reasoning
Decision making
Creating
Understanding and translating spoken and written language
Analyzing data
Making recommendations
It involves the ability of a digital computer or computer-controlled robot to possess qualities like intelligence, such as understanding, learning, and applying knowledge



what is better chatgpt or gemini tell in detail and comparison in table
8:00:09 pm

[SEARCH RESULTS START]
Source 1: ChatGPT vs. Gemini: Which AI Chatbot Is Actually Smarter? | PCMag
URL: https://www.pcmag.com/comparisons/chatgpt-vs-gemini-which-ai-chatbot-is-actually-smarter
Content: Whether you want them to answer questions about a manual, edit a resume, or tell you something about an image, neither disappoints. ChatGPT has the edge over Gemini, however, as it offers slightly better image recognition and more detailed responses when you ask about uploaded files.

Comparison of ChatGPT and Gemini

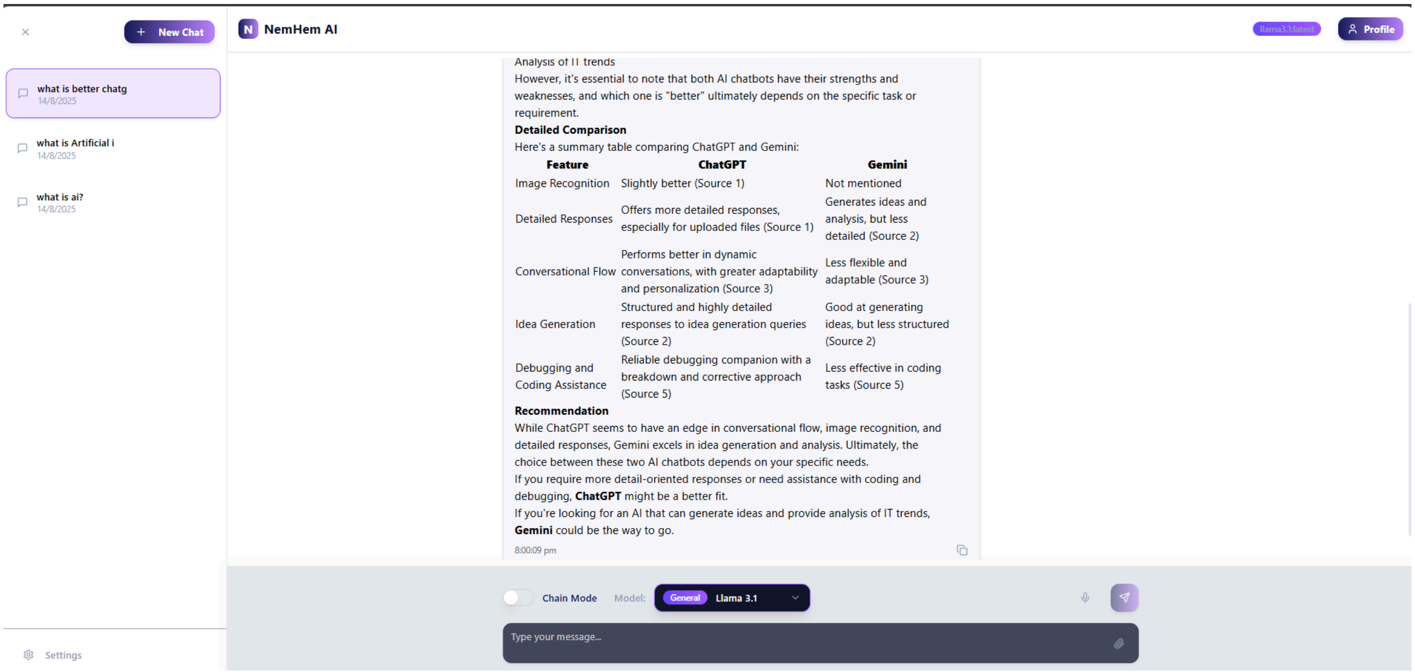
Both ChatGPT and Gemini are AI chatbots designed to assist with various tasks, including answering questions, generating ideas, and providing information. While they share some similarities, each has its strengths and weaknesses.

Overall Comparison

Based on the search results, it appears that:

ChatGPT excels in:

Detailed responses
Image recognition
Conversational flow and adaptability
Personalization
Debugging and coding assistance



Analysis of IT trends

However, it's essential to note that both AI chatbots have their strengths and weaknesses, and which one is "better" ultimately depends on the specific task or requirement.

Detailed Comparison

Here's a summary table comparing ChatGPT and Gemini:

Feature	ChatGPT	Gemini
Image Recognition	Slightly better (Source 1)	Not mentioned
Detailed Responses	Offers more detailed responses, especially for uploaded files (Source 1)	Generates ideas and analysis, but less detailed (Source 2)
Conversational Flow	Performs better in dynamic conversations, with greater adaptability and personalization (Source 3)	Less flexible and adaptable (Source 3)
Idea Generation	Structured and highly detailed responses to idea generation queries (Source 2)	Good at generating ideas, but less structured (Source 2)
Debugging and Coding Assistance	Reliable debugging companion with a breakdown and corrective approach (Source 5)	Less effective in coding tasks (Source 5)

Recommendation

While ChatGPT seems to have an edge in conversational flow, image recognition, and detailed responses, Gemini excels in idea generation and analysis. Ultimately, the choice between these two AI chatbots depends on your specific needs.

If you require more detail-oriented responses or need assistance with coding and debugging, **ChatGPT** might be a better fit.

If you're looking for an AI that can generate ideas and provide analysis of IT trends, **Gemini** could be the way to go.

8:00:09 pm

What Was Implemented

1. Backend Integration (main.py)

- **Added SearxNG search endpoint** at /search/searxng
- **Enhanced the /ask endpoint** to automatically search before responding

- **Streaming response system** that sends search results and AI responses separately
- **Error handling** for SearxNG connection issues

Key Features Added:

- Automatic search using local SearxNG instance at `http://localhost:8888/`
- Search across multiple engines (Google, Bing, DuckDuckGo)
- Limit results to top 5 most relevant sources
- Combine search context with user questions for better AI responses

2. Frontend API Service (api.ts)

- **Created new streaming function** `askModelStreamWithSearch()`
- **Enhanced response handling** to process both search results and AI responses
- **Proper error handling** and response parsing
- **AbortController support** for canceling requests

3. Chat Interface Updates (ChatInterface.tsx)

- **Updated Message interface** to include `searchResults` field
- **Modified handleSend function** to use the new search-enabled streaming
- **Enhanced message rendering** with search results display
- **Fixed link functionality** - all markdown links are now clickable

4. User Interface Improvements

- **Search results display** in an attractive blue-highlighted box
- **Source information** showing titles, URLs, and content snippets
- **Professional styling** similar to Perplexity AI

- **Responsive design** with proper spacing and typography
- **Hover effects** and smooth transitions for better user experience

Technical Implementation Details

Search Integration Flow:

1. User submits a question
2. System automatically searches SearxNG
3. Search results appear in blue highlighted box
4. AI generates response using both question and search results
5. Final answer is contextually informed and source-backed

Key Code Components:

- **Backend search logic** with proper timeout and error handling
- **Streaming response system** that handles multiple data types
- **Frontend state management** for search results display
- **Enhanced message rendering** with fixed link functionality

Bug Fixes Completed:

- **Fixed clickable links issue** - corrected syntax error in ReactMarkdown components
- **Improved search results styling** - enhanced visual appeal and readability
- **Added proper hover effects** and transitions for links
- **Ensured responsive design** across different screen sizes

Results Achieved

Functionality:

✅ **Automatic search before AI responses**
✅ **Real-time information retrieval**
✅ **Source transparency with clickable links**

✅ **Professional Perplexity-like interface**
✅ **Seamless integration with existing chat features**
✅ **Privacy-focused using local SearxNG instance**

User Experience:

✅ **Clear source attribution**
✅ **Improved answer accuracy with current data**
✅ **Professional visual design**
✅ **Smooth interaction flow**
✅ **Working links and proper formatting**

Files Modified

1. **main.py** - Added SearxNG integration and enhanced streaming
2. **api.ts** - Created new search-enabled API functions
3. **ChatInterface.tsx** - Updated message handling and display
4. **Message Interface** - Added search results field

Technical Requirements

- **SearxNG instance** running at http://localhost:8888/
- **Python requests library** for backend HTTP calls
- **React with TypeScript** for frontend
- **Existing chat infrastructure** (Ollama, authentication, etc.)

Next Steps

The integration is now fully functional and ready for production use. Users can immediately benefit from:

- **Current information** in AI responses
- **Source-backed answers** like Perplexity AI
- **Professional user interface**
- **Complete privacy** using local search instance