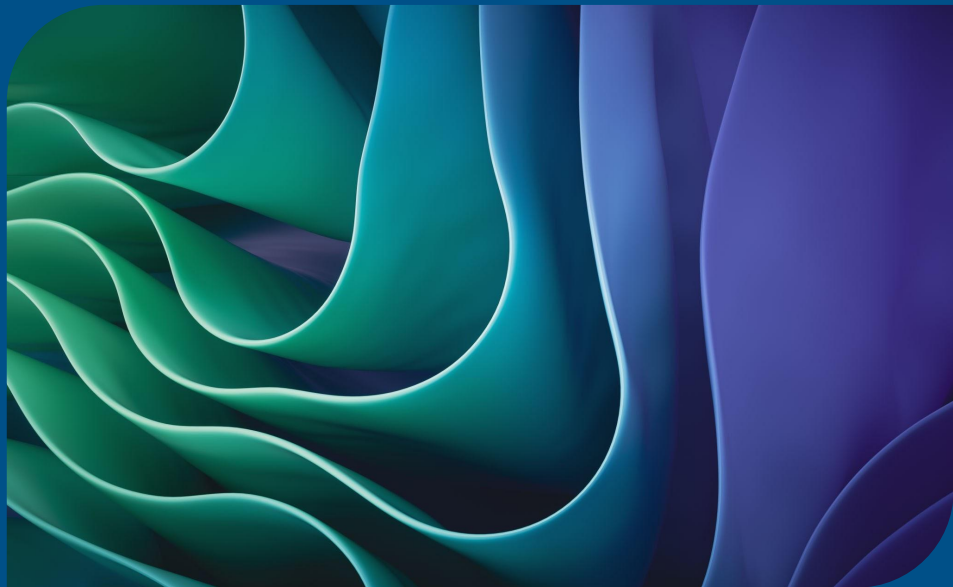# Chatbot Project Overview

A Conversational Assistant with
Google Search Integration

By: Nathan Joo

Introduction to the Chatbot

- Interactive assistant designed for handling queries, math problems, and general knowledge questions.
- Integrates Google Custom Search API for web search functionality.
- Provides an interactive and automated experience

Key Features of the Chatbot

1. **Math Solver**: Solves basic math expressions.
2. **Google Search**: Fetches results for general knowledge queries.
3. **Simple Conversation**: Handles greetings, farewells, and casual conversations.
4. **Error Handling**: Informs users about issues like missing API keys or unrecognized expressions.

Technologies Used

1. **Python**: Programming language for implementing the chatbot logic.
2. **Requests Library**: Used for making HTTP requests to the Google Custom Search API.
3. **Regular Expressions**: For detecting math problems.
4. **Google Custom Search API**: Fetches web search results.
5. **Console-Based Interface**: Allows users to interact through the terminal.

How to Set Up the Chatbot

1. **Install Dependencies**:
   - `pip install requests`

2. **Obtain API Keys**:
   - Register for Google Custom Search API.

3. **Store API Keys**:
   - Add keys to `api_keys.txt`.

4. **Run the Script**:
   - Execute using `python chatbot.py`.

How to Interact with the Chatbot

- **Greetings**: Type "hello", "hi", or "hey" to start the conversation.
- **Math Problems**: Enter math expressions (e.g., "5 + 3") for solutions.
- **General Knowledge**: Ask questions, and the bot fetches search results.
- **Exit**: Type "bye" or "goodbye" to exit.

Demonstration of Chatbot Features

- **Greetings**: Type "hello", "hi", or "hey" to start the conversation.
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Demonstration of Chatbot Features

🤖 **AI Chatbot:** Hello! Ask me anything. Type 'bye' to exit.
💬 **You:** What's the capital of Japan?

📌 **Here's what I found:**

🔹 **1. Capital of Japan - Wikipedia**
📝 The capital of Japan is Tokyo. ... Throughout history, the national capital of Japan has been in locations other than Tokyo. The oldest capital is Nara. Contents.
🔗 [Read more](https://en.wikipedia.org/wiki/Capital_of_Japan)

🔹 **2. Tokyo, Japan**
📝 Tokyo is situated on the Pacific Ocean side of central Honshu, Japan's main island, amidst the Kanto Plain, the largest tract of low-lying terrain in the ...
🔗 [Read more](https://clintonwhitehouse3.archives.gov/WH/New/Pacific/tokyo.html)

🔹 **3. History of Tokyo - Tokyo Metropolitan Government**
📝 The Emperor moved to Edo, which was renamed Tokyo. Thus, Tokyo became the capital of Japan. During the Meiji era (1868-1912), Japan began its avid assimilation ...
🔗 [Read more](https://www.metro.tokyo.lg.jp/ENGLISH/ABOUT/HISTORY/history01.htm)

💬 **You:** |

Drawing a Conclusion

- The chatbot demonstrates basic AI capabilities.
- Integrates web searches for enhanced knowledge retrieval.
- Provides a fun, easy-to-use interface for users.
- Can be expanded with more advanced features in the future.