

The background features a dark blue gradient with a glowing blue circuit board pattern on the left side. A robotic hand with metallic fingers and red glowing elements is positioned on the right, reaching towards the center. The overall theme is futuristic and technological.

# Your Studying Assistant

# Our Team

Omar Abdelnasser

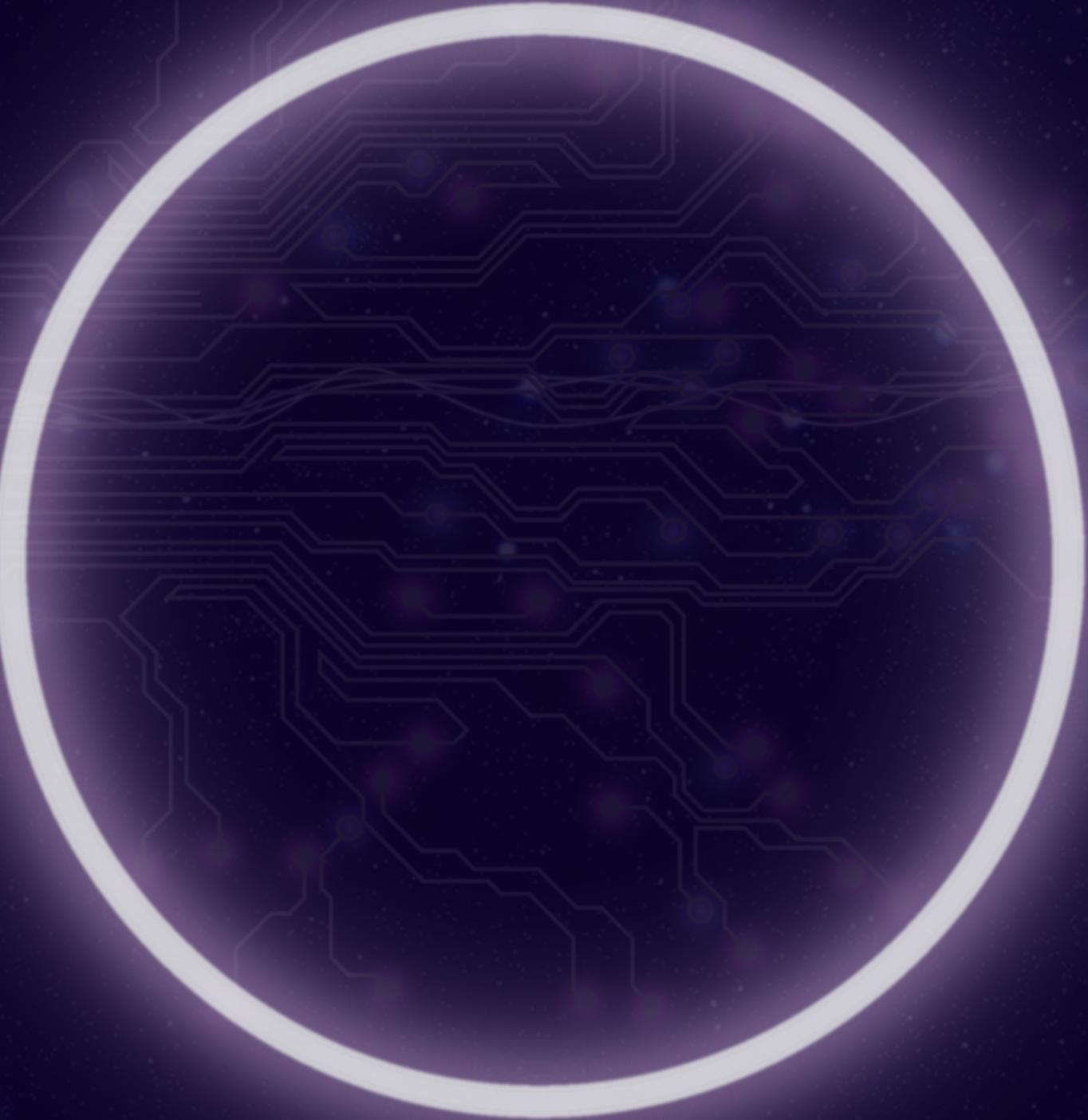
Ziad Hany

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# Problem Statement



When searching for information while studying, we often face challenges such as having limited knowledge of the topic, uncertainty about the correct spelling, or confusion over specific details like punctuation. These obstacles can make it difficult to find accurate and relevant information, leading to a time-consuming and frustrating search process.

# Project Overview

- **Functionality:**

- Accepts a YouTube link to an educational video.
- Allows users to ask questions about the video.

- **Answer Generation:**

- Extracts answers directly from the YouTube video content.
- Combines the video content with relevant information from web searches to provide comprehensive responses.

- **Unique Feature:**

- Provides a richer learning experience by merging insights from both the video and the web for more accurate and detailed answers.
- user can ask question in Arabic , provide it richer experience with its native language

# Methodology

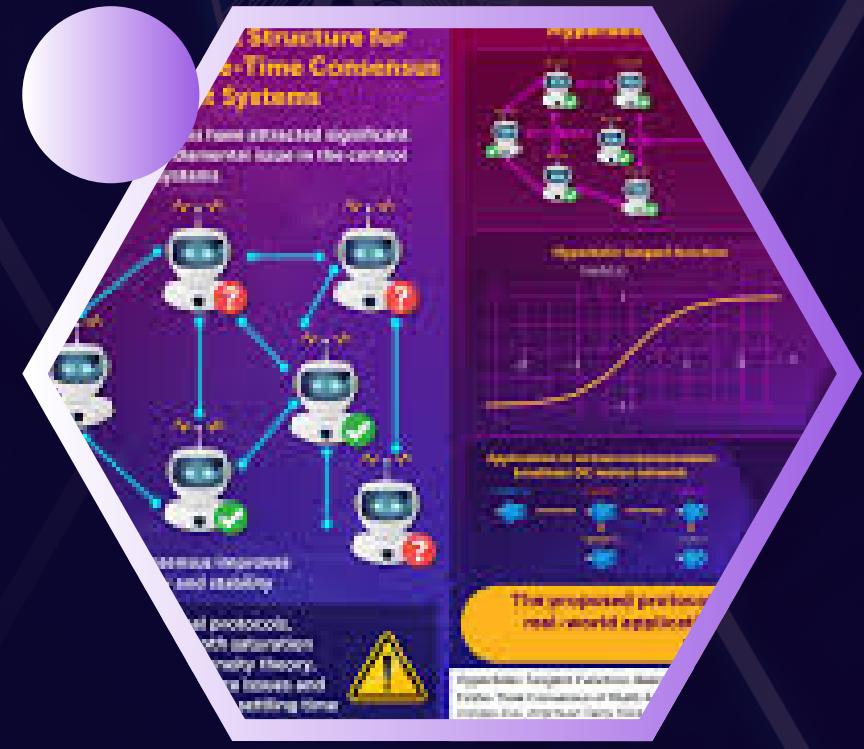
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# vector

# Database

# Gather relevant data from database



# Multi Agent System

Trying to improve the user's answer and add to it to reach the highest possible efficiency.

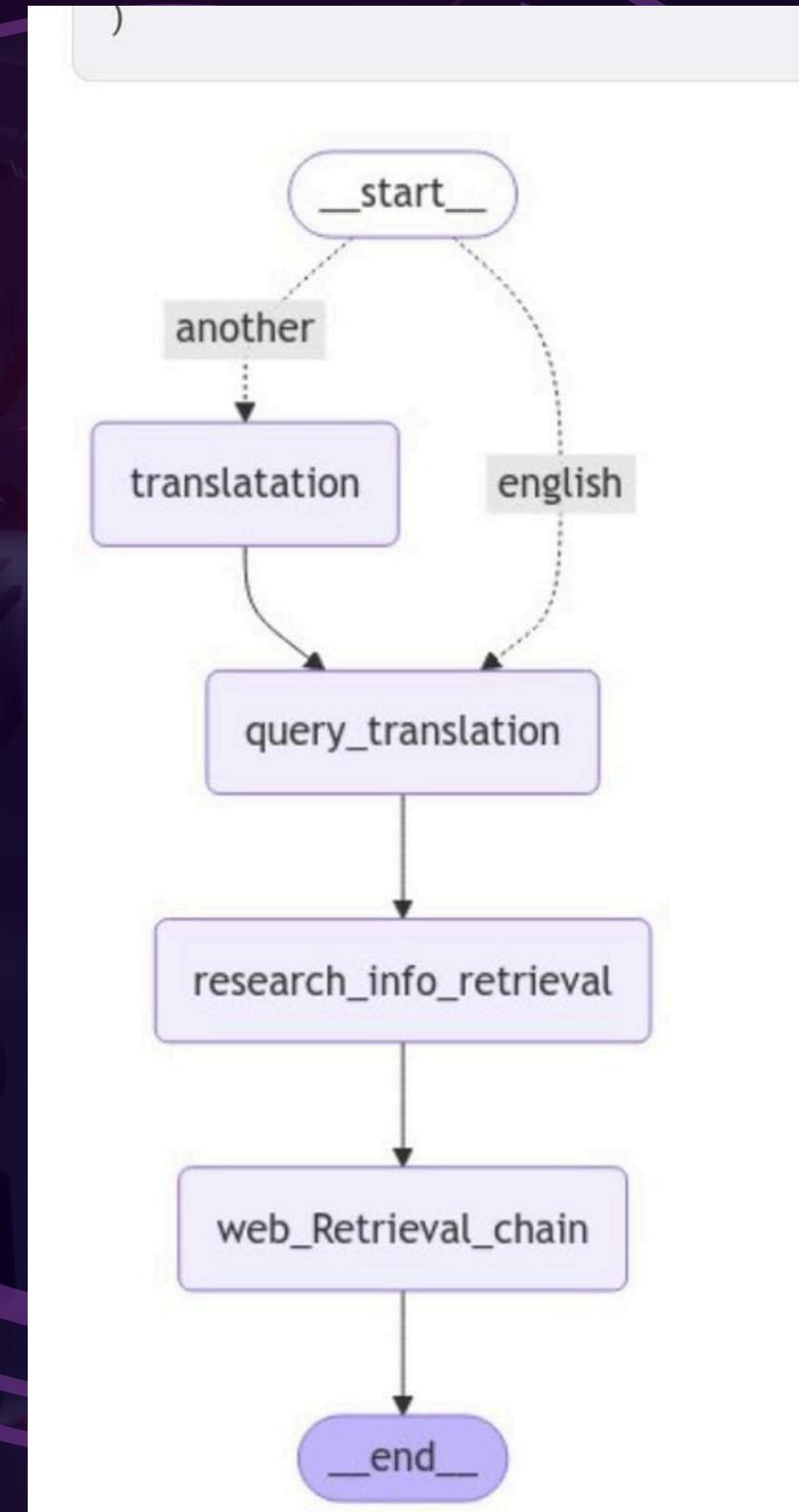


# Query Construction

User query is converted into a vector representation. This vector is then compared to vector representations of the source documents to find the most similar ones

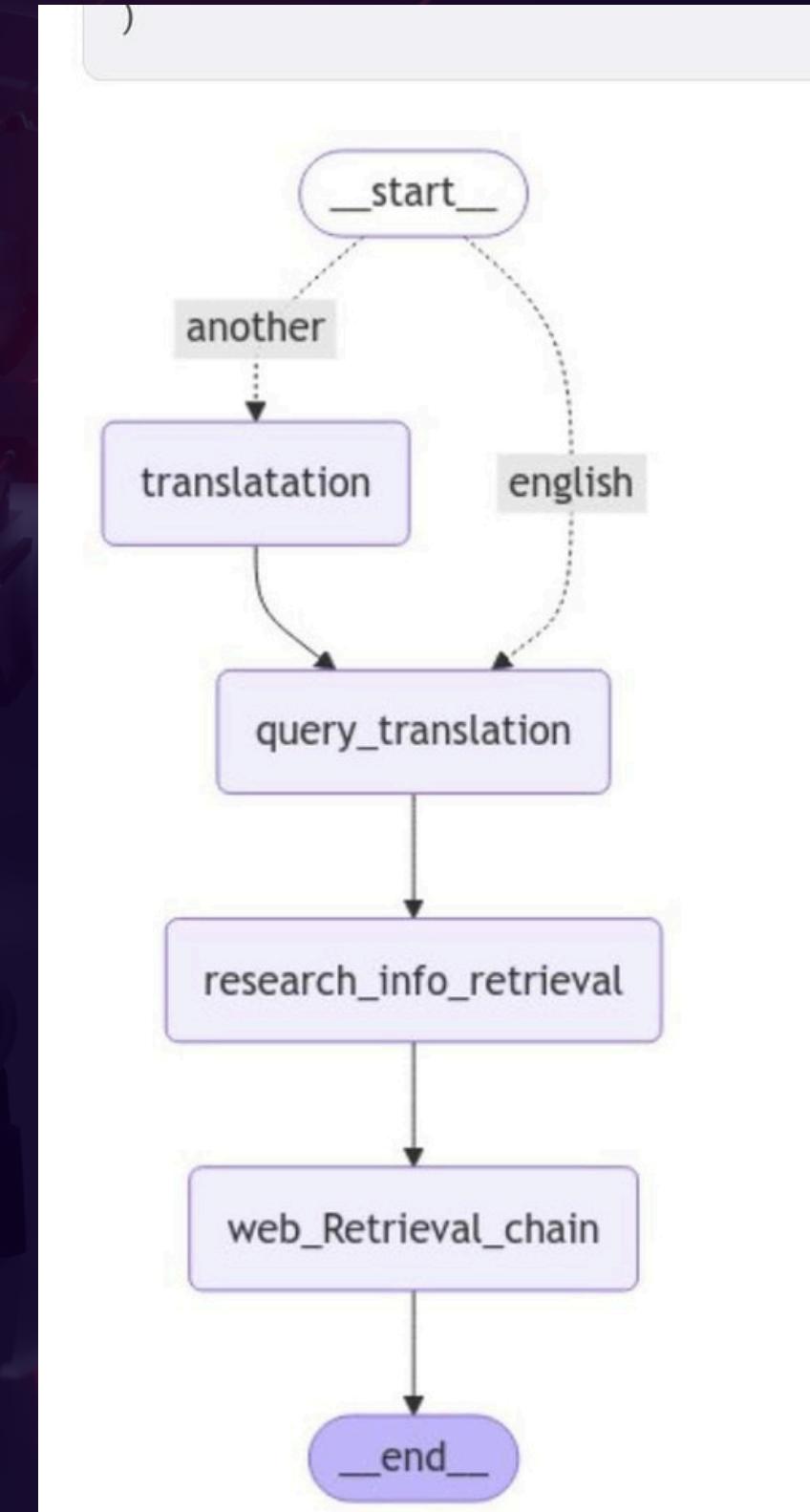
# Model Development

- First A link is entered from YouTube and it will download audio from URL .
- Then extract text from it using **whisper open source model** , and embed it into vector databases.
- Then we will start improving the query that the user will enter and do **Query\_Translation** .



# Model Development

- we perform the research using the new query , the first we do the search using the new query
- we search into the RAG retrieval , then also research into web using tavily API .
- we adding the both to be the context of the question of the user



# Run & Errors

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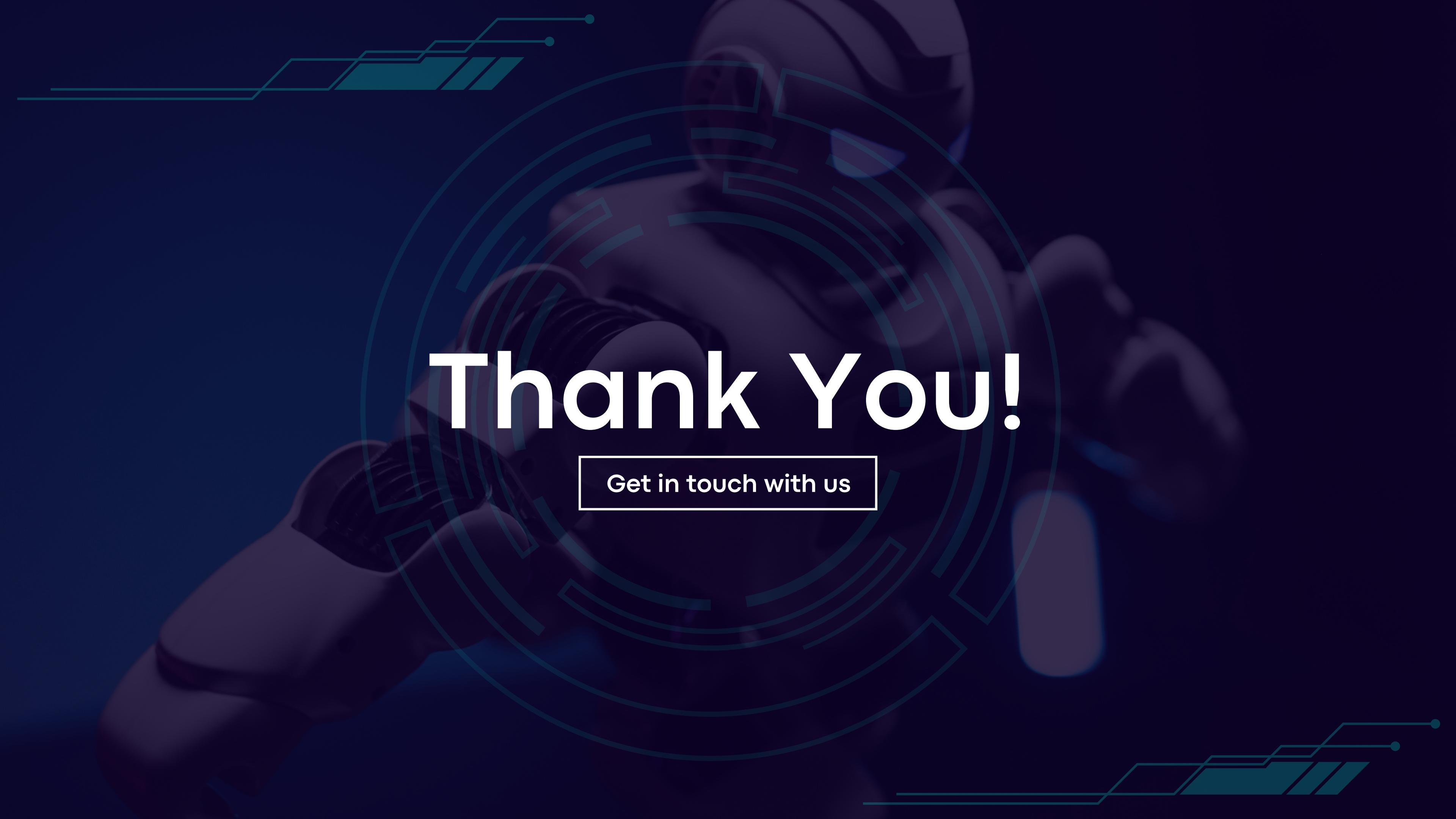
- **Complex Pipeline:** Developing the pipeline for "**Your Studying Assistant**" has been a challenging task due to the intricate workflow involved in combining YouTube video analysis with web search results.
- **New Libraries:** The project involves working with newer libraries like LangGraph , which have limited tutorials and sparse documentation, making the learning curve steeper.
- **Customization Issues with Other Libraries:** While exploring alternatives like AutoGen and CrewAI, we found that these libraries lacked the level of customization needed for the project, leading us to explore other solutions.
- We evaluated various open-source language models and performed **quantization** on LLaMA (8B parameters). This process resulted in more stable performance compared to Phi 3.5, making LLaMA a more reliable choice for our specific use case.
- The **quantization OF LLaMA produces less** latency model with less VRAM usage but with less accuracy and Precision .

# Result and Impact

- Search results are consistent with the required content
- Results are of high accuracy
- Ability to improve, modify, add and delete text

# Future Directions

- To include chat with paper into the system.
- Add voice commands as a type of receiving information from the user.
- Add human feedback to the loop to ensure that the new query is relevant to the user



# Thank You!

Get in touch with us