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Integrating Sentiment Analysis into an Echo Bot

Introduction

The objective of this project was to extend a simple echo bot by integrating sentiment analysis capabilities using Azure AI Services. The original echo bot, sourced from Topic 5, served as the foundation for this extension. The goal was to enhance the bot’s functionality by analyzing the sentiment of user messages and responding appropriately. This report details the process, challenges, and lessons learned during the implementation. To begin, the original echo bot repository was cloned, and a new project environment was set up. A virtual environment was created to manage dependencies, ensuring a clean and isolated development space. The necessary libraries, including the Bot Framework SDK and Azure AI Text Analytics library, were installed to enable the bot’s new functionalities.

A screenshot of a computer

Description automatically generated

Environmental variables were set using the following commands:

A screenshot of a computer

Description automatically generated

Integrating Sentiment Analysis

An instance of `Sentiment Analysis` was created using the configuration values via Azure. This client was used to perform sentiment analysis on incoming messages. The main message handler in the bot was updated to analyze the sentiment of user messages and include this information in the bot’s responses.

A screenshot of a computer

Description automatically generated

The message handler was extended as follows:

A screenshot of a computer

Description automatically generatedTesting and Results

The Bot Framework Emulator was used to test the bot. This tool allowed for real-time interaction with the bot and observation of sentiment analysis results. The sentiment analysis functionality worked as expected, providing feedback on the sentiment of user messages.

API Key Management: Ensuring the API key and endpoint were securely managed using environmental variables. Ensuring all required libraries were compatible and properly installed was crucial to the project’s success.

Lessons Learned

-Environmental Variables: Using environmental variables for sensitive data enhances security and prevents accidental exposure of sensitive information.

-Service Integration: Integrating external services into a bot can significantly enhance its capabilities, demonstrating the potential for more sophisticated AI-driven applications.

Conclusion

This project successfully demonstrated the integration of sentiment analysis into a simple echo bot using Azure AI Services. While the example was basic, it highlighted key concepts and provided a foundation for more advanced chatbot development. This approach can be expanded to create more interactive and intelligent bots that can respond appropriately based on the sentiment of user interactions.

References

- Microsoft. (n.d.). Azure AI Text Analytics client library for Python. Retrieved (https://learn.microsoft.com/en-us/python/api/overview/azure/ai-textanalytics-readme?view=azure-python)

Appendix

GitHub Repository: https://github.com/Sallyshahin/Week3.git

Source Code Archive: https://github.com/Sallyshahin/Week3/archive/refs/heads/main.zip

