## **Here is a list of features of my project:**

1. **Interface Implementation interface for Abstraction (10 points)**
   * I created the IBostService interface to define a contract for the chatbot functionality.
   * I implemented the interface in the DialogflowBotService class to make sure that there is better abstraction and separation of concerns.
2. **Dependency injection (10 points)**
   * I refactored the DialogflowBotService class to use the Dependency injection for the SessionsClient and the sessionPath.
   * This was done by passing the SessionsClient and sessionPath into the constructor, decoupling the service initialization, and improving testability.
3. **Asynchronous Method (10 points)**
   * I implemented the GetBotResposeAsync method using Async and Await.
   * This method will asynchronously call the datalogflow API to retrieve bot responses without blocking the main thread, which will improve the application's responsiveness.
4. **Decorator Pattern (10 points)**
   * I extended the DialogflowBotService class using the Decorator Pattern to log user inputs and bot responses.
   * This was achieved by creating a BotServiceDecorator class to add logging functionality without altering the original service.
5. **Use Inheritance with Parent and Child Classes (10 points)**
   * I Implemented the inheritance to extend functionality in the chatbot design:
     + DialogflowBotService acts as the core service.
     + I extended the service for additional functionality through decorators and allowed room for further enhancements in the future. Maybe add a more simple bot and a more complex bot. I tried this before, but I couldn’t get the neural network to work properly.
6. **GUI Interface with WPF (Extra feature)**
   * I developed a Window Presentation Foundation (WPF) user interface for the chatbot with the following features:
     + Added a RichTextBox for the chat history display.
     + Added a TextBox for the user input.
     + Added a Button for sending messages
     + Enable the Enter Key to send user input for a better user experience.

My final project has successfully implemented a fully functional AI chatbot integrated with Google Dialogflow CX. The application that I developed demonstrates a clean coding practice, including the use of abstraction, dependency injection, asynchronous programming, and design patterns. I also went above and beyond for this project by adding a user-friendly graphical interface that was developed using the WPF, which provided an interactive experience. If I had more time for this project, I would Add additional features to the GUI to make it more appealing and intuitive for users. I will also expand the chatbot’s functionality beyond small talk by improving its neural network to handle complex and meaningful conversations.

Link to project: <https://github.com/BristonDomino/CIS3285_FinalProject_AIChatBot>