

## Assignment: Chatbot Development with Python for AI/ML Engineer

### Position at AppLab

#### Objective

Develop a Python-based application that uses AI/ML techniques to create a chatbot capable of answering user questions based on information extracted from PDF documents. The application should enable users to upload documents and interact with the chatbot through a simple, accessible interface.

#### Requirements

##### 1. Document Upload API

- API Endpoint: Create an API endpoint allowing users to upload PDF documents.
- Text Extraction: Extract and process text from uploaded documents for use as the chatbot's knowledge base.

##### 2. Chatbot API

- Conversational Endpoint: Implement an API endpoint where users can submit questions, and the chatbot responds with answers based on the document content.
- NLP and AI Models: Use NLP techniques and relevant AI models to provide accurate, contextually relevant responses.

##### 3. User Interface

- Interface Design: Develop a basic, user-friendly interface that allows users to:
  - Upload PDF documents.
  - Interact with the chatbot directly through a chat window.
- Usability: Ensure the interface is simple, clear, and facilitates easy interaction with the chatbot.

##### 4. Deployment with Docker

- Containerization: Write a Dockerfile to containerize the application for easy deployment.
- Dependencies and Configuration: Ensure all dependencies and configurations are included in the Docker container.

##### 5. Code Management and GitHub

- Version Control: Push the completed project codebase to a GitHub repository.
- Code Quality: Write clear, well-structured, and readable code with appropriate comments and documentation.

- Documentation: Include a `README.md` file containing:
  - Setup instructions.
  - API documentation.
  - An overview of the chatbot's features and functionalities.

## 6. Presentation

- Duration: Prepare a 10-15 minute presentation.
- Content:
  - Application design and architecture overview.
  - NLP and AI model selection approach.
  - Deployment and usage instructions.
- Live Demo: If possible, provide a live demonstration of the chatbot application in action.

## Evaluation Criteria

- Technical Execution: Completeness and accuracy in document processing, NLP techniques, and chatbot functionality.
- Code Quality: Organization, readability, and documentation quality of the codebase.
- Usability: Simplicity and ease of use of the user interface.
- Deployment: Effectiveness of Docker setup for replicable deployments.
- Presentation: Clarity of explanation and depth of technical understanding demonstrated.

## Deliverables

- GitHub Repository Link: A link to the repository with the complete code and documentation.
- Dockerfile: Include instructions to run the application in a Docker container.
- Presentation: A brief presentation showcasing the project.

**Deadline: 21/05/2025**

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