Project Overview

The project involves developing a demo AI-based application for a military command environment called MUDOFAA AI. It will feature a modular system with a NLP module for military-style text commands, a voice module for speech-to-text and text-to-speech (TTS) capabilities, and a vision module using YOLO for threat and vehicle detection. The user interface (UI) will be inspired by the Uzbekistan Ministry of Defense and national flags, using a military color scheme. The app will support Uzbek, English, and Russian, with offline functionality for security. The first working prototype will focus on 1-2 core modules.

1. NLP Module (Role: AI Developer)

- **Functionality**: Understand and process military-style text commands.

- **Key Features**:

    - Integration of an NLP model (e.g., Hugging Face transformers or custom-trained models).

    - Command parsing with accurate contextual understanding.

    - Command output is linked to appropriate system responses or actions.

2. Voice Module (Role: AI Developer)

- **Functionality**: Convert speech to text (STT) and reply via text-to-speech (TTS).

- **Key Features**:

    - Integration of Whisper or Silero for speech-to-text functionality.

    - Integration of TTS technology to respond to commands or queries.

    - Language support for Uzbek, English, and Russian.

3. Vision Module (Role: AI Developer)

- **Functionality**: Detect threats or vehicles in images using YOLOv8 or similar models.

- **Key Features**:

    - Integration of YOLOv8 or an alternative object detection model.

    - Real-time processing of camera input (if available) for threat detection.

    - Categorization of detected objects (e.g., vehicles, threats) and alerting the system accordingly.

4. User Interface (Role: UI/UX Developer)

- **Functionality**: A simple, user-friendly interface to interact with the system.

- **Key Features**:

    - Military-style design with elements from the **Uzbekistan Ministry of Defense** and **Uzbek national flags**.

    - Color scheme using **military-style colors**: dark green, black, grey, and camouflage.

    - The AI system name **MUDOFAA AI** clearly displayed.

    - **Language support** for Uzbek, with options for English and Russian.

    - A clean, minimalistic GUI using tools like Tkinter, PyQt, or Streamlit.

5. Offline Functionality (Role: Backend Developer)

- **Functionality**: Ensure that all models run locally without an internet connection.
- **Key Features**:
    - Model deployment in a way that it can work in offline environments.
    - Local storage of data and processing without cloud reliance.
    - Lightweight system architecture to optimize for offline usability.

6. Modular Design (Role: Backend/AI Developer)

- **Functionality**: Build a modular system to ensure easy upgrades and scalability.
- **Key Features**:
    - Modular architecture allowing for easy future additions (e.g., more models, features).
    - Clear separation of modules for NLP, voice, vision, and UI, ensuring scalability.

7. Multilingual Support (Role: AI/Backend Developer)

- **Functionality**: Support for multiple languages.
- **Key Features**:
    - Initial support for Uzbek, English, and Russian.
    - Easy expansion to support additional languages in the future.
    - Proper language detection and seamless switching between languages.