**Telegram AI Bot Documentation**

**Overview**

This Telegram bot integrates with Google's Gemini AI to provide intelligent conversational responses and image analysis. The bot maintains chat history using MongoDB and interacts with users in a friendly and engaging manner.

**Features**

* **Conversational AI**: Uses Google's Gemini AI to generate informative and engaging responses.
* **Image Analysis**: Describes images uploaded by users.
* **Chat History**: Stores chat history in MongoDB to maintain context.
* **Personalized Experience**: Recognizes returning users and offers a personalized welcome.

**Setup & Configuration**

**Prerequisites**

* Python 3.8+
* A Telegram bot token
* A Google Gemini API key
* A MongoDB database instance

**Installation**

1. Clone the repository:
2. git clone https://github.com/your-repo/telegram-gemini-bot.git

cd telegram-gemini-bot

1. Install dependencies:

pip install -r requirements.txt

1. Create a .env file and add:
2. TELEGRAM\_TOKEN=your\_telegram\_token
3. GEMINI\_API\_KEY=your\_gemini\_api\_key

MONGO\_URI=your\_mongodb\_connection\_string

**Running the Bot**

Execute the following command to start the bot:

python bot.py

**Bot Functionalities**

**1. Start Command**

When a user starts the bot using /start, the bot:

* Greets the user.
* Checks if the user exists in the database.
* Welcomes returning users with a personalized message.

**2. Text-Based Chat**

Users can send messages, and the bot responds intelligently:

* Maintains conversation context by storing chat history.
* Generates responses using Gemini AI.
* Provides informative and engaging answers.

**3. Image Analysis**

When a user sends an image:

* The bot downloads and processes the image.
* Encodes the image in base64.
* Uses Gemini AI to analyze and describe the image.
* Returns a detailed description to the user.

**Code Breakdown**

**1. Environment Setup**

The bot loads environment variables from files.env and initializes the Telegram bot, Gemini API, and MongoDB connection.

**2. Database Integration**

MongoDB stores:

* User details (users\_collection)
* Chat history (chat\_history\_collection)

**3. AI-Powered Conversations**

The chat\_with\_gemini function:

* Retrieves the last 5 messages from chat history.
* Sends user input along with context to Gemini AI.
* Generates a response and sends it back to the user.
* Stores both the user message and bot response in the database.

**4. Image Analysis**

The analyze\_image function:

* Retrieves the uploaded image.
* Converts it to base64 and sends it to Gemini AI for analysis.
* Returns a detailed description of the image.

**5. Handlers**

* /start: Triggers the welcome process.
* Text messages: Handled by chat\_with\_gemini.
* Image messages: Handled by analyze\_image.

**Future Enhancements**

* Support for multilingual responses.
* Voice message recognition and responses.
* Sentiment analysis for better emotional intelligence.

**Conclusion**

This bot integrates cutting-edge AI capabilities into Telegram, providing a dynamic and interactive experience. It serves as both a conversational assistant and an image analyzer, making interactions more engaging and insightful.

For any issues or enhancements, feel free to contribute!