AI Chatbot Using Machine Learning - Project Explanation

This project is a simple AI-powered chatbot built using Python, TensorFlow, and NLTK. It classifies user input into intents using a trained neural network and responds accordingly.

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1. intents.json:

This is the dataset containing sample user messages (patterns) and expected responses. It is structured as intents with tags, patterns, and responses.

2. train_chatbot.py:

This script handles data preprocessing and model training.

- Loads and parses the intents JSON.
- Tokenizes and lemmatizes words from patterns.
- Creates a bag-of-words representation.
- Builds a feedforward neural network using TensorFlow (Sequential model).
- Trains the model and saves it as chatbot_model.h5.
- Also saves the vocabulary (words.pkl) and intent tags (classes.pkl).

3. chatbot.py:

This script loads the trained model and enables interactive chatting.

- Loads the model and preprocessing data.
- Processes user input into a bag-of-words vector.

- Predicts the intent using the model.

- Fetches and displays a response for the predicted intent.

How it works:

- You train the model using train_chatbot.py.

- It learns the patterns and classifies future input messages.

- chatbot.py runs the chat loop and lets users interact with the bot.

Technologies Used:

- Python

- NLTK (Natural Language Toolkit)

- TensorFlow / Keras

- NumPy

- JSON (for dataset)

This chatbot runs in the terminal and can be extended to web or mobile platforms using frameworks like Flask or React.