AIPlaneTech MBM-AIM

(Hands-On AI Solutions Lab work - AIPlaneTech Batch-2)

For any AI Model - Define Objectives and Use Cases

- **Goal Setting:** Determine the chatbot's purpose—customer support, lead generation, or information retrieval
- **Define Target Audience:** Identify user needs and possible queries
- **Set KPIs:** Establish key performance indicators (KPIs) to measure success

Data Collection and Preprocessing

- **Gather Data:** Collect conversation data from relevant sources (chat logs, customer queries, etc.)
- **Data Cleaning:** Remove irrelevant content, correct inconsistencies, and normalize text
- **Tokenization:** Break down sentences into words or tokens
- **Stop Word Removal:** Eliminate common words that don’t add much meaning
- **Lemmatization/Stemming:** Reduce words to their root form

Choose NLP Framework and Model

Select NLP Tools: Choose frameworks like TensorFlow, Keras, spaCy, NLTK, or Hugging Face.

Model Type: Select an appropriate model:

- Rule-based (simple decision tree)
- Machine learning-based (e.g., Random Forest, SVM)
- Deep learning-based (e.g., TensorFlow, Keras, PyTorch, GPT, BERT, LSTM)

Train and Fine-Tune the Model

Train with Collected Data: Use conversational data to train the model
Fine-Tuning: Improve accuracy by adjusting parameters or using transfer learning with pre-trained models and optimizers (e.g., TensorFlow, SGD, xGBoost, GPT-3, BERT)
Validation: Split data into training and validation sets to monitor performance

Design Conversation Flow

- **Define Dialogue Structure:** Create conversation paths with decision trees or state-based dialogues
- **Intents and Entities:** Map out possible intents (user goals) and identify entities (specific details in queries)
- **Fallback Mechanism:** Create responses for unknown or unrecognized inputs

Integrate with User Interface

API Integration: Connect the chatbot backend to various platforms (website, mobile app, messaging apps)

UI/UX Design: Ensure smooth interaction with a user-friendly interface

Channel Deployment: Integrate with popular platforms such as WhatsApp, Slack, or Facebook Messenger

Test and Deploy

Track Metrics: Monitor chatbot performance using KPIs (response time, accuracy, satisfaction rates)

Analyze User Feedback: Identify common failure points and improve responses

Retrain Model: Update the model periodically to improve accuracy and relevance

Final Outcome

A fully functional AI-powered chatbot capable of understanding and responding to user queries efficiently!