**Phase-1 Submission Template**

**Student Name:** BALA D

**Register Number:** 421323205006

**Institution:** KRISHNASAMY COLLEGE OF ENGINEERING AND TECHNOLOGY

**Department:** IT (Information Technology)

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**1.Problem Statement :**

In today’s digital world, customers expect fast, accurate, and 24/7 support. Traditional customer service methods often involve long wait times, inconsistent service quality, and high operational costs. Our project aims to solve these challenges by developing an intelligent chatbot that can handle customer queries automatically, offering immediate and relevant assistance. This not only improves customer satisfaction but also reduces the workload on human agents.

**2.Objectives of the Project :**

* To design and develop an AI-powered chatbot capable of understanding and responding to customer queries effectively.
* To integrate natural language processing (NLP) techniques for better context understanding.
* To reduce human workload and improve customer service efficiency through automation.

**3.Scope of the Project :**

* Develop a chatbot that can handle basic to intermediate level queries across domains like e-commerce, banking, or IT support.
* Include capabilities such as intent detection, sentiment analysis, and predefined fallback responses.
* Optional: Integrate the chatbot with messaging platforms like WhatsApp, Telegram, or web portals.
* Limitation: The chatbot will not replace human agents entirely for critical or sensitive cases.

**4.Data Sources :**

* Publicly available chatbot training datasets (e.g., customer service conversations from Kaggle).
* Manually created intents and responses for domain-specific queries.
* NLP corpora for improving language understanding.

**5.High-Level Methodology :**

* Data Collection: Gather customer interaction data and predefined query-response sets.
* Data Preprocessing: Clean and tokenize text, remove stop words, and perform stemming/lemmatization.
* Intent Classification: Use NLP techniques and ML algorithms to classify user queries.
* Response Generation: Map intents to appropriate responses using rule-based or ML-based approaches.
* Integration: Optionally integrate the bot with chat interfaces (web, app, etc.).
* Testing and Evaluation: Measure chatbot accuracy, precision, and user satisfaction scores.

**6.Tools and Technologies :**

* Programming Language: Python.
* NLP Libraries: NLTK, spaCy, Transformers (HuggingFace)
* Modeling: Scikit-learn, TensorFlow/Keras
* Chatbot Frameworks: Rasa, Dialogflow (optional)
* Frontend (Optional): HTML, CSS, JS or Streamlit for deployment

**7.Team Members and Roles :**

* Asim Ahamed– Handles data collection, cleaning, and NLP preprocessing.
* Madesh – Responsible for chatbot model development and training.
* Madhan – Works on intent classification and response generation logic.
* Bala – Manages integration with chat interfaces and deployment (if applicable).
* Praveen Raj – Responsible for testing the chatbot performance and user experience feedback analysis.