

Customer Support RAG with Sentiment Analysis

Problem Statement

Build a RAG system for customer support that retrieves relevant help articles while analyzing customer sentiment and escalation patterns to provide empathetic and effective responses.

Key Requirements

- Help article and knowledge base processing
- Real-time sentiment analysis and mood detection
- Escalation pattern recognition and prediction
- Empathetic response generation
- Customer satisfaction tracking and optimization

Technical Challenges

- Emotion detection in text communication
 - Context-aware empathy modeling
 - Escalation prediction algorithms
 - Multi-turn conversation analysis
 - Response tone calibration
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Deliverables

A fully working deployed demo (e.g., via Streamlit, Gradio, or HuggingFace Spaces)

A well-structured GitHub repository with clean code, documentation, and a README.md explaining the system

A public link to the working application

Project Scope & Guidelines

Each RAG project will focus on a specific domain such as law, healthcare, finance, education, or multimodal data processing (text, image, audio, video).

Students must:

- Use appropriate embedding models (e.g., OpenAI, HuggingFace Sentence Transformers)
- Implement retrieval using vector databases like **Chroma**, **Pinecone**, or **Weaviate**
- Design effective **chunking strategies** tailored to the data type
- Provide meaningful **retrieval-based responses** using context-aware generation
- Ensure their system has **clear UX**, **logical data flow**, and **relevance scoring**
- Evaluate with basic metrics (e.g., retrieval accuracy, latency, or RAGAS)

Submission Requirements

- GitHub repo link
- Deployed app link
- **Deadline: 3 days from the assigned day**