

# AI-Powered Knowledge Engine for Smart Support & Ticket Resolution

## Project Statement:

This project focuses on developing an intelligent, AI-based knowledge management platform tailored for customer support teams. The system will use large language models (LLMs) such as OpenAI GPT and Meta LLaMA to automatically tag, categorize, and recommend relevant support articles based on ticket content. By integrating with tools like Google Sheets (for data handling) and Slack (for team communication), the platform will enable real-time solution suggestions and help identify content gaps. The aim is to improve response consistency, reduce resolution times, and ensure that support agents can quickly access relevant knowledge with minimal friction.

## Expected Outcomes:

- Automated content classification and tagging for faster article retrieval and organized knowledge access.
- Real-time solution recommendations aligned with the context of incoming support tickets.
- Analysis-driven updates to the knowledge base by identifying high-usage content and gaps in coverage.
- Improved efficiency and accuracy in customer support interactions with minimal manual intervention.

## Modules to be Implemented:

### 1. Knowledge Categorization & Tagging Engine

- Uses NLP techniques to auto-classify support documents based on intent, context, and themes.
- Applies semantic understanding to assign relevant tags and categories that improve searchability.

### 2. Real-Time Article Recommendation System

- Analyzes live ticket content to match and suggest articles from the knowledge base.
- Learns from feedback and usage patterns to refine recommendation accuracy over time.

### 3. Content Gap Detection & Improvement Module

- Monitors article usage metrics to flag frequently referenced solutions or outdated content.
- Identifies underrepresented topics and notifies content managers for knowledge base enrichment.

#### **4. Integration & Reporting Hub**

- Connects with ticketing systems (e.g., Google Sheets, Zendesk) and communication tools like Slack.
- Visualizes knowledge base health, article performance, and detected content gaps.

#### **Milestones:**

##### **Milestone 1: Weeks 1–2**

**Objective:** Establish infrastructure and begin foundational training

**Tasks:**

- Set up ticket data integration via Google Sheets or similar platforms.
- Train the team on LLM-driven categorization and tagging workflows.
- Begin collecting and preprocessing historical ticket data for model input.

##### **Milestone 2: Weeks 3–4**

###### **Module: Knowledge Categorization & Tagging Engine**

**Objective:** Implement automatic classification and tagging system

**Tasks:**

- Apply LLMs (e.g., GPT, LLaMA) for content categorization based on semantic meaning.
- Validate tagging quality and category accuracy through pilot datasets.

##### **Milestone 3: Weeks 5–6**

###### **Modules: Real-Time Recommendation Engine & Content Gap Module**

**Objective:** Deliver article suggestion engine and initiate content improvement feedback loop

**Tasks:**

- Implement a live recommendation model that responds to ticket input in real time.
- Track which articles are frequently referenced or left unused to identify potential gaps.
- Set up automated alerts for low-coverage support areas.

##### **Milestone 4: Weeks 7–8**

###### **Module: Integration & Reporting Hub**

**Objective:** Deploy dashboards and communication channels

**Tasks:**

- Build and deploy analytics dashboards using tools like Seaborn or Matplotlib.
- Integrate Slack notifications for newly flagged gaps or updated content.
- Finalize feedback loops and agent interfaces for knowledge interaction.

**Evaluation Criteria:**

- **Milestone 1 (Week 2):** Initial environment set up; ticket data collected and LLM usage introduced to the team.
- **Milestone 2 (Week 4):** Categorization and tagging engine deployed; verified classification accuracy.
- **Milestone 3 (Week 6):** Real-time suggestion engine functional; content gap tracking in place with reporting.
- **Milestone 4 (Week 8):** Dashboard and Slack integration complete; system actively monitoring and reporting usage trends.