

# AI-Powered ChatBot for CPGRAMS



## Team Members:

### Leader:

Name: Aditya Jadhav

Academic Year: 3rd Year (Final Year)

Institution: Government Polytechnic Nagpur

### Team Member:

Name: Prajwal Patil



Academic Year: 3rd Year (Final Year)

Institution: Government Polytechnic Nagpur

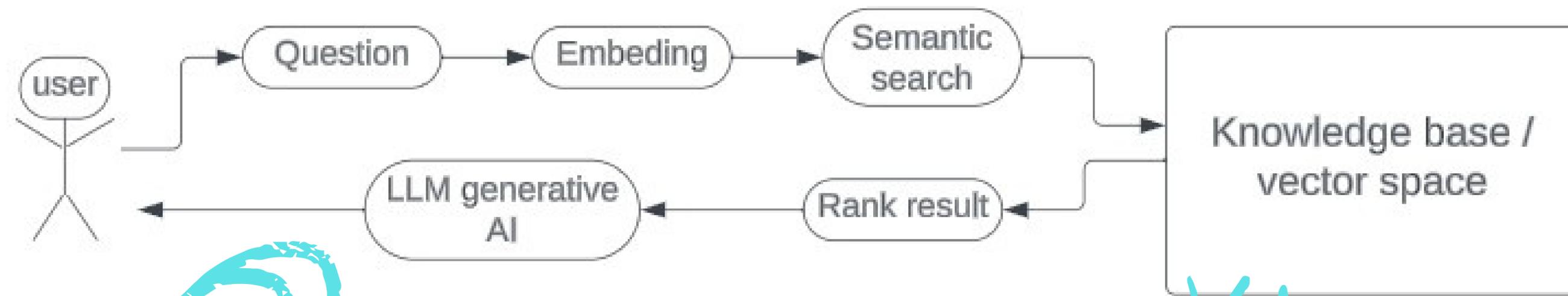
# Introduction

The screenshot shows a Streamlit-based chatbot interface. At the top, there's a navigation bar with a 'Deploy' button and a three-dot menu icon. Below it, a large heading says 'CPGRAM Grievance Support' next to a small robot icon. A message bubble from the bot says 'Hey! 🤖' with a yellow smiley face emoji. A user message bubble says 'Hello! Ask me anything about 😊'. Below these, there are two more user message bubbles: 'What is CPGRAM?' and 'How to fill grievance form?'. At the bottom, there's a large input field with placeholder text 'Please describe your queries here...' and a right-pointing arrow icon.

The "Grievance ChatBot" project employs AI/ML to enhance user interactions with the CPGRAMS portal. *Ministry-specific* assistance for grievance filing is provided through cutting-edge language models, including *Mistral-7B-Instruct*. Leveraging Streamlit, LLM for question-answering, SentenceTransformerEmbeddings, and FAISS for storage, the chatbot ensures swift and accurate responses.

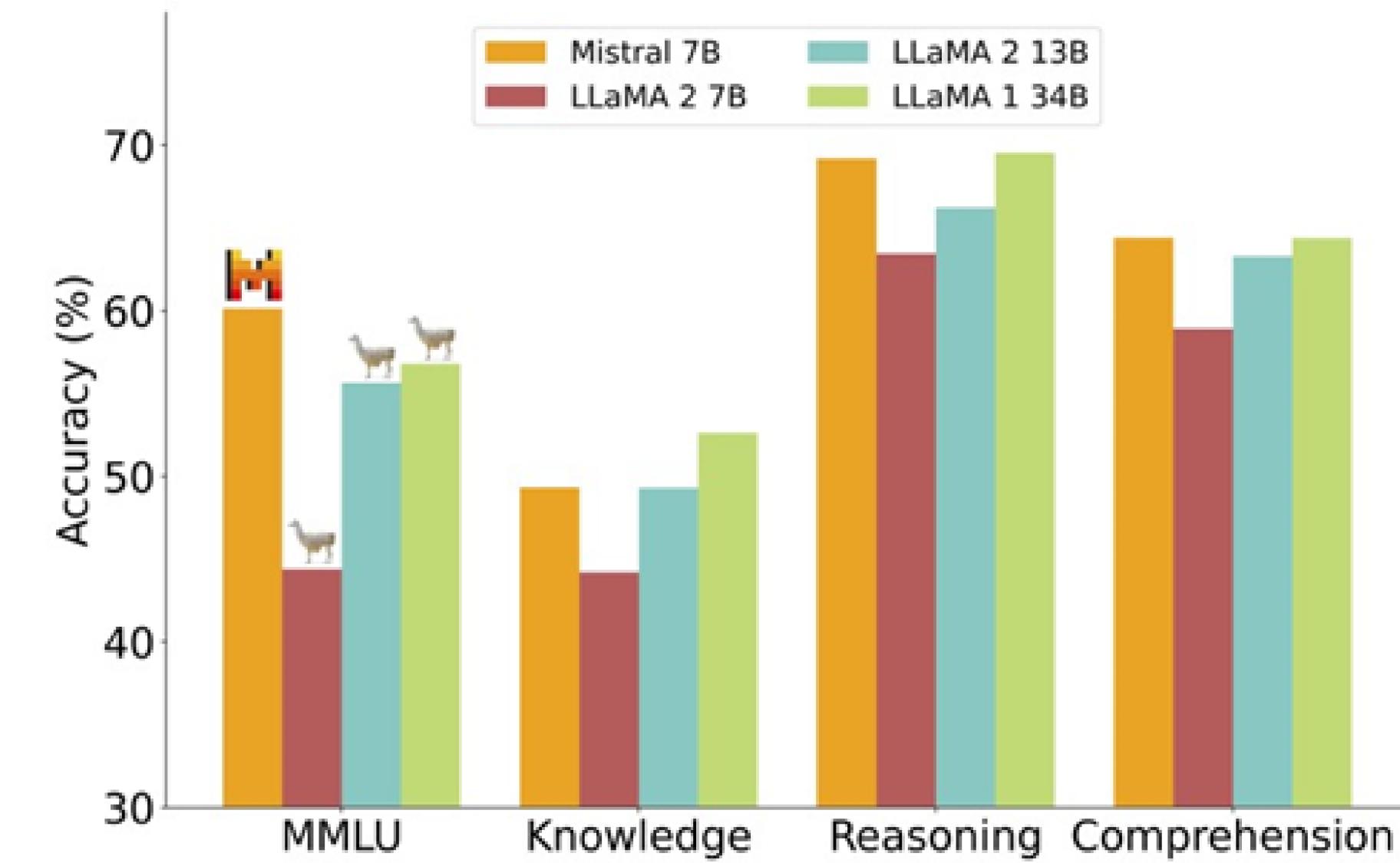
# System Architecture

01	02	03	04	05	06	07
<b>User Interface (Streamlit):</b> Interactive and user-friendly.	<b>Language Models and Embeddings:</b> LLM (Mistral-7B-Instruct), SentenceTransformerEmbeddings.	<b>Vector Storage (FAISS):</b> Efficient storage for quick retrieval.	<b>Custom Prompt Template:</b> Guides structured and contextual responses.	<b>Offensive Language Detection:</b> Maintains a respectful environment.	<b>Session Management:</b> Tracks conversation history for coherence.	<b>Deployment and GPU Handling:</b> Dynamic adaptation for optimal performance.



# Language Model (LLM - Mistral-7B-Instruct):

Utilizing the Mistral-7B-Instruct model, specifically *quantized*, optimizes performance. Specialized for instructional language, it aligns seamlessly with grievance-related queries. Quantization benefits include memory efficiency and faster inference.



# Dataset and Vector Creation:

In crafting the Grievance ChatBot, a purposeful dataset is assembled from CPGRAMS, encompassing diverse user queries and responses. This dataset forms the basis for creating embeddings and building an efficient vector store for streamlined information retrieval.

01.

**Data Collection:** Meticulously curated from CPGRAMS, ensuring a representative sample of user interactions.

02.

**Embeddings and Vectorization:** Utilizing SentenceTransformerEmbeddings, textual data is transformed into semantic vectors, facilitating effective comprehension by the chatbot.

03.

**Vector Storage (FAISS):** FAISS is employed for storing and organizing the vectorized data, providing a fast and precise retrieval mechanism during user interactions.

# Potential Enhancements

01

**Expanded Knowledge Base:**  
Enrich dataset for broader coverage.

02

**Contextual Understanding:**  
Fine-tune language model for precision.

03

**Multi-lingual Support:**  
Extend language inclusivity.

**Thank you !**