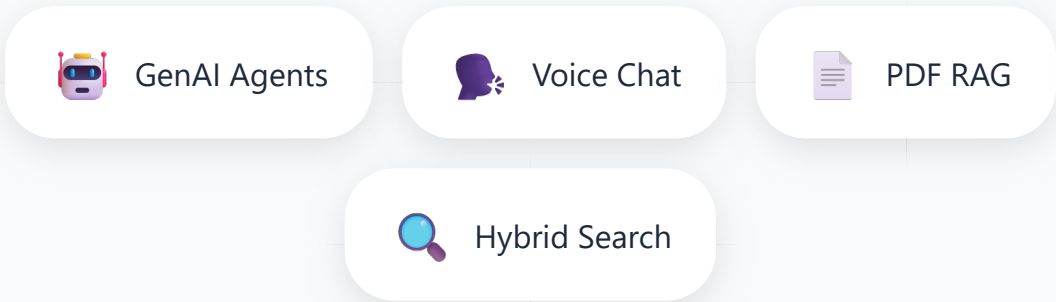



HDFC Insurance Assistant

Advanced GenAI Solution for Insurance

A comprehensive Flask-based web application addressing multiple hackathon themes with cutting-edge AI technology, featuring dual agents, voice support, and innovative PDF RAG capabilities.





Hackathon Project

Multi-theme GenAI solution for
HDFC Insurance

5 Themes Addressed

Customer Support • Claims • Field Sales •
Recommendations • Innovation



Hackathon Themes Addressed



Customer Support GenAI Agent

Conversational support for general insurance queries, policy details, and comprehensive customer assistance through intelligent dialogue.



Insurance Claim Assistant Agent

Specialized handling of claim-related queries by retrieving relevant policy information and providing accurate claim guidance.



Field Sales Training Agent

Empowers field agents with tailored prompts and strategies to pitch insurance policies effectively to potential customers.



Product Recommendation Agent

Recommends suitable insurance products based on user queries, preferences, and contextual information analysis.



Innovation: PDF Viewer RAG Agent

Revolutionary feature enabling users to query specific policy documents interactively, enhancing comprehension of complex insurance policies.



Comprehensive Solution

Our platform addresses all hackathon themes while introducing groundbreaking PDF RAG technology for enhanced policy understanding.



Dual Agent System



Consumer Assistant

- **Customer Support GenAI** - General insurance inquiries
- **Claims Assistant** - Claim-related questions and guidance
- **Product Recommendations** - Personalized policy suggestions
- **Voice Chat Support** - Conversational voice interface
- **Policy Context** - Document-based responses

Target: End-users seeking insurance information and support



Field Assistant

- **Sales Training** - Specialized prompts for policy pitching
- **Employee Support** - Tools for insurance professionals
- **Field Scenarios** - Context-aware sales assistance
- **Policy Expertise** - In-depth product knowledge
- **Customer Interaction** - Best practices and strategies

Target: Field agents and insurance sales professionals



Voice Chat Innovation

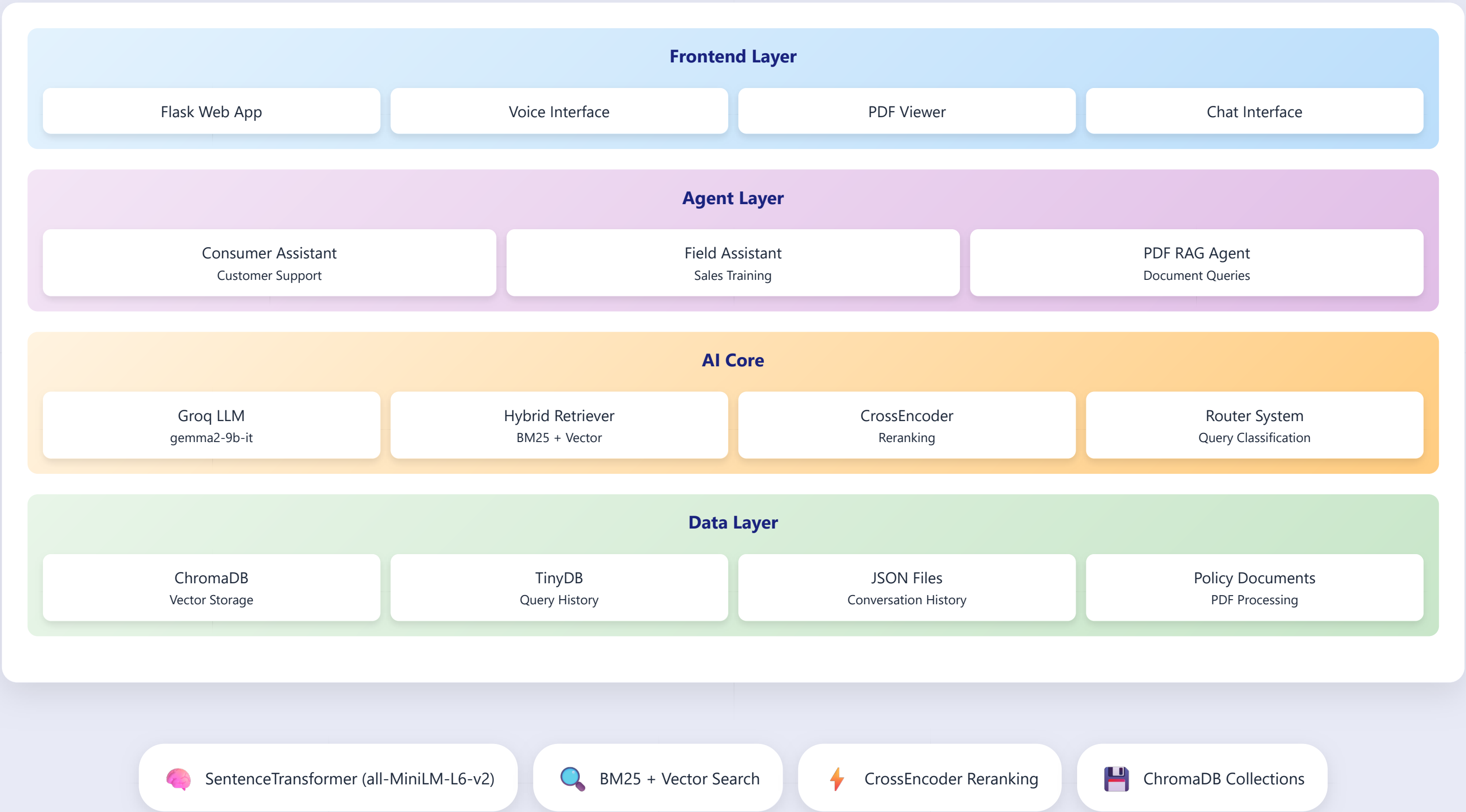
Integration: Google Speech Recognition library

Accessibility: Voice input for insurance queries

Response: Context-aware voice and text output



Technical Architecture



Advanced Hybrid Search

1 Query Routing & Classification

Router System: Intelligent classification determines the appropriate insurance collection (pension_plans, ulip_plans, health_plans, protection_plans, savings_plans, annuity_plans, all_policies, or general) based on query analysis and conversation history.

2 Dual Search Strategy

BM25 Keyword Search

Uses rank_bm25 library for term frequency-based retrieval

Vector Semantic Search

SentenceTransformer embeddings with cosine similarity

3 CrossEncoder Reranking

Model: ms-marco-MiniLM-L-6-v2 combines and deduplicates results from both search methods, then reranks to prioritize the top 5 most relevant documents for optimal context.

4 Response Generation

LLM Integration: Groq gemma2-9b-it generates contextual responses using retrieved documents, conversation history, and appropriate agent prompts (Consumer or Field Assistant).

ChromaDB Collections

pension_plans

ulip_plans

health_plans

protection_plans

savings_plans

annuity_plans

all_policies

Innovative PDF RAG Agent

1 Document Processing

PyPDFLoader: Extracts text content from uploaded policy documents while maintaining structure and context.

2 Text Chunking

CharacterTextSplitter: Intelligently segments document content into manageable chunks for optimal retrieval and processing.

3 Vector Storage

SentenceTransformerVectorStore: Creates and stores semantic embeddings for efficient similarity-based document retrieval.

4 Query Resolution

LLM Response: Generates accurate, context-aware answers by combining retrieved document chunks with conversation history.

Key Features & Benefits

1

Multi-Theme Coverage
Addresses all five hackathon themes in a single, comprehensive solution with specialized agents for different use cases.

2

Voice-Enabled Interface
Revolutionary voice chat support using Google Speech Recognition for natural, conversational insurance interactions.

3

Advanced RAG Technology
Leverages Retrieval-Augmented Generation with hybrid search (BM25 + Vector) and CrossEncoder reranking for precise, context-aware responses.

4

PDF Document Interaction
Innovative PDF RAG Agent allows users to upload and query specific policy documents, enhancing understanding and accessibility.

5

Thorough Plan Review
PDF Viewer enables users to thoroughly explore their preferred plan documents, ensuring clarity and informed decision-making.

6

Dual Agent System
Supports both end-users (Consumer Assistant) and field agents (Field Assistant) with tailored functionalities for diverse needs.

7

Scalable Architecture
Built with Flask, ChromaDB, and Groq LLM, ensuring scalability, efficiency, and robust performance for enterprise use.

