

Agentic AI Assistant for ShopUNow

**Capstone Project -
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Addressing the Business Problem: Scaling Retail Support with AI

Retail companies face a significant challenge in managing the **large volume of customer and employee queries**. Traditional manual support systems are:

- Slow and inefficient
- Costly to maintain
- Difficult to scale with business growth

There is a critical need for an intelligent solution that can **automatically route and answer queries**, freeing up human agents for more complex issues.





Project Objectives: Crafting an Intelligent AI Assistant

Build an Intelligent Agentic AI Assistant

Develop a sophisticated AI assistant designed specifically for **ShopUNow** operations.

Support Dual User Bases

Ensure the assistant effectively serves both **internal employees** and **external customers**, tailoring responses to their specific needs.

Leverage Advanced AI Techniques

Integrate cutting-edge technologies like **Agentic AI**, **Retrieval-Augmented Generation (RAG)**, and intelligent **routing workflows** for optimal performance.

Comprehensive Department Coverage

The Agentic AI Assistant is designed to handle queries across various critical departments, ensuring specialized support where needed.

Internal Departments



- **HR:** Policies, payroll, leave management
- **IT Support:** System access, VPN, hardware troubleshooting

External Departments



- **Billing:** Payments, refunds, invoices
- **Shipping:** Order tracking, delivery updates, logistics

Robust Data & Knowledge Base



Synthetic FAQ Datasets

Utilized advanced Large Language Models (LLMs) to **generate comprehensive, synthetic FAQ datasets** for each department.



Extensive Q&A Content

Created **15 detailed question-and-answer pairs per department**, ensuring thorough coverage of common inquiries.



Total of 60 Q&A Entries

A rich knowledge base comprising a **total of 60 Q&A entries**, providing a solid foundation for the AI's responses.

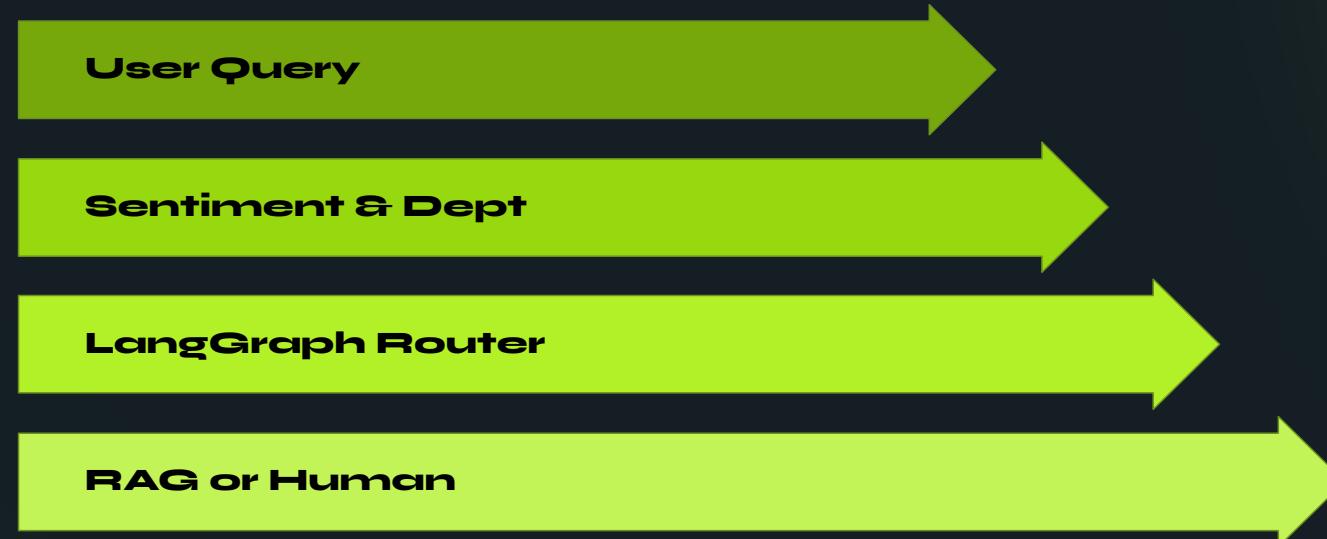


Contextual Metadata Storage

Each entry is stored with **relevant department metadata**, enabling the AI to retrieve highly context-specific information.



System Architecture: How the Agentic AI Works



The Agentic AI system efficiently processes user queries, ensuring accurate routing and resolution.

- **User Query Entry:** All interactions begin with a user query.
- **Initial Processing:** Queries undergo sentiment analysis and department classification.
- **Intelligent Routing:** A LangGraph-based router intelligently directs the query to the appropriate workflow.
- **Knowledge Retrieval:** The RAG pipeline retrieves relevant answers from ChromaDB.
- **Escalation Mechanism:** Negative sentiment or unknown queries are seamlessly escalated to human support.



The Agentic AI Workflow: Orchestrating Intelligence

Sentiment Agent



Analyzes user input to detect **negative, positive, or neutral sentiment**, informing subsequent routing decisions.

Classifier Agent



Identifies the **relevant department** (e.g., HR, IT, Billing) based on the query content.

Router Agent



Determines the optimal path: an **AI-generated response** via RAG or **escalation to human support**.

RAG Agent



Generates **grounded, contextually accurate responses** by retrieving information from the knowledge base.

Robust Technology Stack

Our Agentic AI Assistant is built on a foundation of powerful and flexible technologies.



Python

The core programming language for development.



LangGraph

Used for advanced agentic routing and state management.



LangChain

Orchestrates Language Models for complex workflows.



ChromaDB

Provides efficient vector storage for the RAG pipeline.



OpenAI GPT-4o-mini

Powers intelligent reasoning and response generation.



Streamlit

Enables a user-friendly and interactive interface.

Key Results & Demo Highlights

Accurate Query Routing

Successfully routes both employee and customer queries to the correct departments with high precision.

Contextual Responses

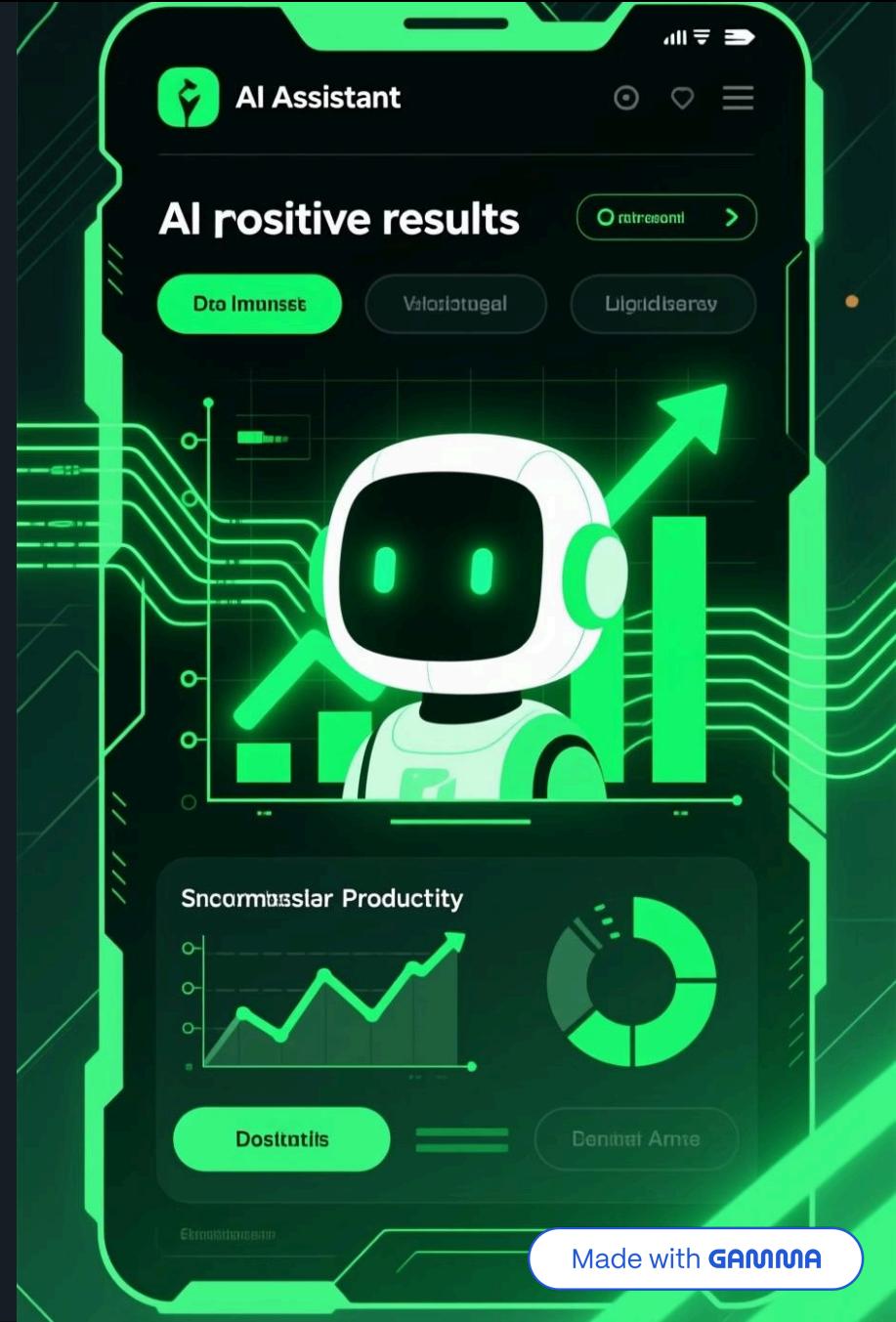
Delivers accurate and relevant answers by leveraging department-specific Retrieval-Augmented Generation (RAG).

Effective Escalation

Automatically identifies and escalates queries with negative sentiment to human support agents for timely intervention.

Multi-Turn Conversation

Maintains conversational memory, allowing for fluid and coherent multi-turn interactions with users.



Conclusion & Future Scope

The Agentic AI Assistant for ShopUNow represents a significant step forward in retail operational efficiency.

1

Successful Implementation

We have successfully built and demonstrated a functional Agentic AI Assistant, ready for further development.

2

Improved Efficiency & Scalability

This solution significantly enhances support efficiency and offers unmatched scalability for growing retail operations.

3

Expand Department Coverage

Integrate additional departments and complex workflows to broaden the assistant's capabilities.

4

Enhanced Escalation Channels

Integrate with email or WhatsApp for seamless and diversified human support escalation.

5

Production Deployment

Transition the assistant into a robust production API for real-world application and continuous improvement.