

National Agency Propels Engagement With a Multilingual Chatbot

Case Study



Overview

Enabling better responses to user queries

A national statistics agency wanted to make it easy for users to access timely, accurate, and official statistics to advance economic growth, development, and democracy.

Zensar's brief:

Deploy a multilingual chatbot that responds to user queries about the country's complex population census documents in natural language.

Beyond the brief:

We implemented guardrails to prevent irrelevant information generation and ensure adherence to source document fidelity.



Challenges

Multiple barriers to access

Users encountered various issues while attempting to find the required information:

- **Complex formats:** The users, especially the differently abled ones, faced challenges in manually searching for information within voluminous documents of various formats, including PDFs and website links.
- **Language barriers:** Multilingual documents posed difficulties in accurate translation and interpretation for users.
- **Statistical data interpretation:** Raw and complex statistical data interpretation was daunting for users in the absence of visualization or analysis tools.



Solution

AI-powered multilingual chatbot

As our client's technology partner, we collaborated with the client's team every step of the way with the goal of supporting the client's wide user base by creating an effective chatbot solution.

Defining priorities: After gaining a deep understanding of the client's IT ecosystem and the needs of the user base, we defined these solution priorities:

- **Enhance query handling** to enable greater response accuracy and rapid information retrieval from year-specific statistical data.
- **Put in place guardrails** to help prevent jailbreaking attempts, unauthorized usage, and non-compliance issues.
- **Deploy multilingual features** to support users of different languages and those with visual impairments.
- **Improve transparency and reliability** for incorporation of citations from a document excerpt into the generated response.

Designing functionality: We designed a generative AI solution, leveraging large language models (LLMs) enhanced by retrieval-augmented generation (RAG), to deliver these key functions:

- Interpret and extract information from different formats (texts, tables, images, and websites) within census documents and store them in an AI database.
- Understand users' specific requirements, enable them to continue Q&A in natural language, and retrieve information from the AI database to generate contextually relevant responses, using LLMs and Open AI's GPT models.
- Enable users to share speech commands and listen to the content in their preferred language with multilingual features, such as text-to-speech (TTS) and speech-to-text conversion (STT).

Enabling the solution: Drawing on our Azure competencies, we put together a powerful mix of Azure services to deliver the solution:

- **Azure OpenAI Service** was used to leverage LLMs for interpreting complex census documents, answering user queries in natural language, and generating contextually relevant responses; this helped ensure accurate and efficient retrieval of statistical data.
- **Azure AI Search** was used to enable advanced search capabilities across voluminous census documents in various formats (such as PDF and HTML), improving accessibility and reducing manual search efforts by 35 percent.
- **Azure App Service** was used to host the chatbot application reliably, ensuring seamless user interactions and supporting a scalable platform for continuous Q&A in natural language.
- **Azure Functions** was used for serverless execution of specific backend tasks, such as triggering data extraction workflows from documents or interacting with the database, ensuring faster processing times.
- **Azure Cosmos DB** was used to store and manage the structured and unstructured census data, enabling real-time access to multilingual content and supporting efficient retrieval with high availability.
- **Azure AI Document Intelligence** was used to extract and interpret data from various census document formats (such as tables, forms, and PDFs), transform raw statistical data into meaningful insights for users, and ensure statistical data interpretation.
- **Azure Storage Accounts** was used for secure storage of user-uploaded files, processed outputs, and other intermediary data, ensuring high reliability and scalability for handling large datasets.

- **Azure AI Services** (speech service) was used to support multilingual TTS and STT features, enhancing accessibility for users with visual impairments and breaking language barriers.



Impact

Greater user engagement

According to internal benchmarks, these results were delivered:

- 35 percent reduction in manual efforts
- 40 percent faster generation of relevant responses
- 40 percent increase in reliability

Business outcomes: By delivering satisfying personalized interactions and improving information accessibility and accuracy, the solution promises to reinforce users' trust in the national agency.

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