Use-cases list

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Use case 1: AI-Driven Business Insights from Data Lakes

Organization

Bilvantis Technologies

Overview

Organizations today accumulate vast amounts of data in data lakes, yet unlocking valuable business insights remains a challenge. Traditional data analysis methods require domain expertise and manual effort, slowing down decision-making. To bridge this gap, we aim to develop an AI-powered Business Insight Generator that leverages Generative AI (GenAI) and Knowledge Graphs to transform business queries into actionable insights through interactive visualizations.

Objective

The goal of this hackathon is to build a Python-based AI system that allows business managers to input a question, challenge, or opportunity, and receive automatically generated insights in the form of graphs and charts, enabling data-driven decision-making.

Key Components of the Solution

The solution will be divided into three major stages:

1. Insight Generation (GenAI-Powered)
    - A Generative AI model (such as OpenAI's GPT, Llama, or Falcon) will analyze the business question and generate a list of required insights.
    - The model should be capable of understanding natural language queries and extracting key data points, trends, or KPIs.
    - The human-in-the-loop mechanism should allow business users to validate, refine, or modify the list of insights before proceeding.

2. Data Extraction (Knowledge Graph & Data Querying)
    - Once the insights are finalized, the system should query the data lake to extract relevant data.
    - Utilize Knowledge Graphs to establish relationships between different data entities and enhance the relevance of extracted information.
    - Support integration with data lakes such as AWS S3, Azure Data Lake, Google Cloud Storage, or on-prem Hadoop clusters.

3. Generic Graph Construction (Visualization & Storytelling)
    - The extracted data should be automatically visualized into appropriate graph formats (bar charts, line graphs, heatmaps, etc.) using Matplotlib, Seaborn, Plotly, or D3.js.
    - The AI should intelligently select the most appropriate graph based on the type of insight required.
    - The final output should be a dashboard-like interface displaying interactive graphs, enabling users to explore patterns and trends effectively.

Success Criteria

The solution will be evaluated based on the following key factors:

1. Insight Generation Quality
    - Ability to understand and break down the business query into relevant insights.
    - Effectiveness of human-in-the-loop validation.

2. Data Extraction Accuracy
    - Correct mapping of insights to data lake queries.
    - Effective use of Knowledge Graphs to improve data relevance.

3. Graph Construction & Visualization

- Automated selection of appropriate visual formats for the extracted insights.
- Interactivity and clarity of data representation.

Technical Stack (Suggested)

- Programming Language: Python
- GenAI Model: OpenAI GPT-4, LLama 2, Claude, or Falcon
- Knowledge Graph: Neo4j, RDF Graph, NetworkX
- Data Querying: SQL (Presto, Hive), Pandas, PySpark
- Visualization: Matplotlib, Plotly, Seaborn
- Data Lake: AWS S3, Azure Data Lake, Google Cloud Storage, Hadoop

Sample Use Case

User Input (Business Query):"How have sales trends changed in the last 6 months for our top 3 products?"

Step 1: Insight Generation (GenAI-powered)

- Sales trend of top 3 products over 6 months.
- Comparative analysis of revenue growth.
- Seasonal impact on product demand.

Step 2: Data Extraction (Knowledge Graph-assisted)

- Query sales database in the data lake.
- Aggregate revenue data and product demand.

Step 3: Graph Construction (Visualization)

- Generate a line graph comparing sales trends.
- Create a bar chart showing month-over-month growth.
- Display an interactive heatmap highlighting seasonal effects.

Expected Outcome

A fully functional prototype that translates business queries into actionable insights by combining GenAI, Knowledge Graphs, and data visualization in Python. The solution will empower business managers with AI-driven data exploration, enabling faster and more informed decision-making.

🚀 Challenge your AI skills—build the future of business insights! 🚀

Use case 2: Voice agent for BFSI

Organization

Posibl AI

Overview

Develop an AI-driven voice agent that simulates the role of a Sales Development Representative (SDR) for fintech companies. The agent will focus on executing outbound calls to both existing and potential customers, delivering tailored scripts, capturing responses, and facilitating the next steps in the sales process. The agent must be able to talk in both English and Hindi. This project challenges participants to build a solution that mimics human conversation, ensuring natural human voice tone, clarity, and a seamless user experience.

Objective

Create an AI voice agent that can autonomously handle outbound calls to drive customer engagement and generate leads, effectively replacing traditional SDR tasks.

Key Deliverables:

- An interactive voice system capable of understanding and generating natural Language.
- Integration with customer data sources to personalize calls.
- A logging mechanism to capture call transcript, call recording for follow-up and analysis.

Compliance
Ensure the solution adheres to fintech regulatory and data privacy standards.

Approach

- Design the Dialogue System
    - Develop a conversation flow that includes opening greetings, value proposition, handling FAQs, and call-to-action segments.
- Speech Technologies Integration
    - Use speech recognition to capture and transcribe customer responses.
    - Implement text-to-speech to deliver natural-sounding outbound call scripts.
- Backend and API Integration
    - Connect with telephony APIs (such as Plivo, Twilio) for call initiation and Management.
    - Integrate with a CRM or database to pull customer details and log interactions.
- Iterative Testing
    - Simulate real-world scenarios to test conversation accuracy, response capture, and system robustness.
    - Implement feedback loops to refine dialogue strategies and system performance.

Possible technologies

Programming Language: Python

Speech Recognition & Synthesis

- For ASR/STT , use 3rd party APIs like Deepgram, navana ai, etc.
- For TTS, use 3rd party tools like elevenlabs, smallest.ai, etc.

Natural Language Processing (NLP)

- Use locally or cloud hosted LLMs.

Telephony Integration

- APIs such as Twilio or Plivo to handle outbound call functionality.

Data Management

- Integration with SQL/NoSQL databases or CRM systems to store call logs and customer data.

Success criteria

Call Execution: The system successfully initiates outbound calls with a high call completion rate.

Dialogue Quality

- High accuracy in speech-to-text conversion and natural-sounding text-to-speech delivery with a clear Indian accent.
- The conversation flow is fluid, context-aware, and capable of handling customer queries effectively.

Response Handling: Accurate transcription of customer responses with appropriate follow-up actions triggered.

Integration & Compliance: Seamless integration with telephony and backend systems.

User Experience: Measurable improvements in customer engagement and lead conversion compared to traditional SDR methods.

Use case 3: Conversational AI Assistant

Organization

Sarvam AI, https://www.sarvam.ai/

Overview

The AI assistant helps users with everyday tasks by understanding their requests and calling the right tools or services to provide a solution.

Examples of Use Cases

- **Booking a meeting** (e.g., using a calendar tool to schedule appointments)
- **Checking stock prices** (e.g., calling a finance API to fetch live market data)
- **Finding nearby restaurants** (e.g., using a location service to recommend places to eat)
- **Making a reservation** (e.g., using a booking platform to reserve a table at a restaurant)
- **Sending a file** (e.g., using a cloud storage service to share documents)
- **Setting an alarm** (e.g., calling an alarm system to remind the user of important events)
- **Ordering food** (e.g., using a food delivery service to place an order)
- **Checking flight status** (e.g., integrating with an airline's system to check flight times)

It's not necessary to use these examples specifically; feel free to choose any use case you prefer.

Expectations

The LLM analyzes the user's prompt to identify the intent behind the request, and once the intent is determined, the assistant provides an appropriate solution to address the user's needs.

Things to consider

1. Build an end to end agent that solves the problem. (Use any frontend framework).
2. The Solution **must** use tool calling - i.e. the LLM must decide the intent. Do not hardcode intent from the user input.
3. Refer to this article that explains what tool calling is.

Note: Please build this solution from scratch without using any framework. **You can use AI to help**.

Feel free to make it more complex—we're excited to see what you create!

Can't wait to see your project!

Use case 4: Health Insurance Explainer Agent

Organization

Neuraoak Technologies

Overview

In India, voice calls are a primary mode of communication, especially for explaining complex information like insurance policies. For Telugu-speaking customers, "Tenglish" – a natural blend of Telugu and English phrases in everyday conversation – is a common and comfortable way to communicate. This use case focuses on building a voice agent that can explain health insurance policies effectively in Tenglish.

Objective

Develop a voice agent capable of explaining health insurance policies in English to Telugu-speaking customers.

Example

You can refer to a sample policy from UIIC Limited as a reference.

Approach

Imagine a new Telugu-speaking customer who has purchased a health insurance policy. A voice agent proactively calls the customer in Tenglish to explain the key benefits of their policy, coverage amount, premium payment schedule, and the claim process in simple, conversational Tenglish. This aims to improve customer understanding and reduce confusion.

Challenge

Focus solely on developing a voice agent.

Features for a voice agent:

- Tenglish Voice Support: Implement voice interaction specifically in Tenglish. The agent should be able to understand and speak in a natural Tenglish style.
- Natural Language Conversation in Tenglish: Enable the voice agent to engage in natural and relevant conversations in Tenglish using Speech-to-Text (STT) and Text-to-Speech (TTS) capabilities. Focus on understanding and generating common Tenglish phrases, even if grammatically mixed. Think about how people actually speak Tenglish.
- Call Summarization (English): Generate a brief summary of the call outcome and key information discussed, in English. (Summarizing in English can be a practical starting point).

Possible technologies

Indian Language Text-to-Speech (TTS), Speech-to-Text APIs: Sarvam AI, Krutrim AI Labs (sign-up first).

Programming languages: Python or node.js

Success criteria

- Ability to make outbound calls and handle a basic call flow.
- Quality of Tenglish Voice Interaction: Evaluate how natural and understandable the STT and TTS are when used for Tenglish. Does it sound reasonably like conversational Tenglish?
- Accuracy of Benefit Explanation in Tenglish: Ensure the voice agent can accurately explain the key benefits of a health insurance policy in Tenglish.
- Usefulness of English Call Summary: The generated English summary should be a helpful recap of the conversation.

Note: Effectively implementing a few (at least 1 or more) features is better than having an array of incomplete features.

Happy hacking!

Jury panel

Sonu Kumar

Sonu Kumar is a *seasoned entrepreneur* with years of experience in building and scaling AI-driven businesses. As the *Co-Founder & CTO of Sporo Health*, he is driving innovation in healthcare by training AI models that enhance clinical decision-making and improve patient outcomes.

Beyond Sporo Health, Sonu is the *founder of AI Anytime*, a YouTube channel and global community dedicated to making AI accessible to professionals and enthusiasts. Through AI Anytime, he educates and engages a wide audience, simplifying complex AI advancements and fostering a collaborative space for learning and innovation.

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Soumendra Kumar Sahoo

Soumendra Kumar Sahoo is an AI Observability Architect and AI Sustainability Lead at PepsiCo, with over 12 years of enterprise technology leadership.

He holds an M.Tech in Data Science and Engineering from BITS Pilani, where his research was focused on LLM alignment. His contributions to the field include an IEEE-published paper on LLM fine-tuning, a pending patent and significant involvement in multiple open-source projects.

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Resources

Tools

- Bolt.new – Create beautiful, functional UI interfaces with prompts
- Lovable – Create beautiful, functional UI interfaces with prompts
- Vapi AI – Voice AI for developers

APIs

- Google Gemini
- OpenAI
- Sarvam AI – Join Discord for questions

Programming

- Python
- JavaScript/TypeScript