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Success Story

Agent AI Powered Sales Tasks Automation Using LangGraph and LLM

Overview

This case study describes the development and implementation of an Agent AI Powered Sales Task automation using LangGraph Agents. The primary objective was to automate various customer relationship management (CRM) tasks such as creating contacts, adding notes, and retrieving customer details by leveraging speech recognition, natural language understanding (NLU), and task execution agents. The system was designed to improve operational efficiency, ensuring scalable, interactive, and user-friendly automation for managing CRM tasks.

Business Problem

The client, a growing IT company that manages numerous customer interactions daily, was struggling with keeping their CRM updated with vital information from calls and emails. Their manual process resulted in:

- Missed or incomplete updates in CRM.
- Unrecorded notes, leading to poor lead management.
- Delayed follow-ups, affecting collaboration.
- A lack of insights into customer relationships and opportunities.

The goal was to streamline CRM data entry and automate tedious tasks, allowing sales and support agents to focus on higher-value activities.

Introduction

A growing business needed an efficient solution to manage CRM tasks like creating contacts, adding notes, and retrieving customer information in crm. Manual entry was leading to missed updates and inefficiencies. This case study demonstrates how an AI-powered automation system was implemented using LangGraph Agents to streamline CRM operations.

System Architecture

The application was built using LangGraph, a modular, agent-based architecture that operates through nodes (agents), edges (interactions between agents), and states (context management). This graph-based system allows for scalability, flexibility, and efficient workflow management. Key agents and concepts within this architecture include:

1. Nodes (Agents):

- **Speech-to-Text (STT) Agent:** Converts voice inputs into text using the speech_recognition library.

- **LLM Agent:** Understands the intent of transcribed text by utilizing language models.

- **Information Gathering Agent:** Interacts with users to collect missing information.

- **Task Execution Agent:** Executes tasks within CRM by interacting with its API.

2. Edges (Interactions):

- These define the communication paths between agents. For instance, after the STT agent processes voice input, it sends the text to the NLU agent, creating an edge between the two nodes.

- Each edge represents a transition in the workflow, ensuring agents collaborate to complete tasks efficiently.

3. State Management:

- A shared state holds the context, acting as a central repository of information. It tracks the progress of task execution, stores user inputs, and manages the current status of workflows.

- Agents access and update the state as tasks are processed, ensuring that the system can handle dynamic changes and context-aware operations.

4. Graph-Based Architecture:

- Langgraph organizes these agents into a graph, where each agent is a node, and the interactions between them are edges. This architecture allows for easy modification and scaling, as new agents can be added or removed without disrupting the overall workflow.

5. Task Execution Agent:

- Executes tasks within HubSpot CRM by interacting with its API, automating actions such as creating contacts or updating tasks.
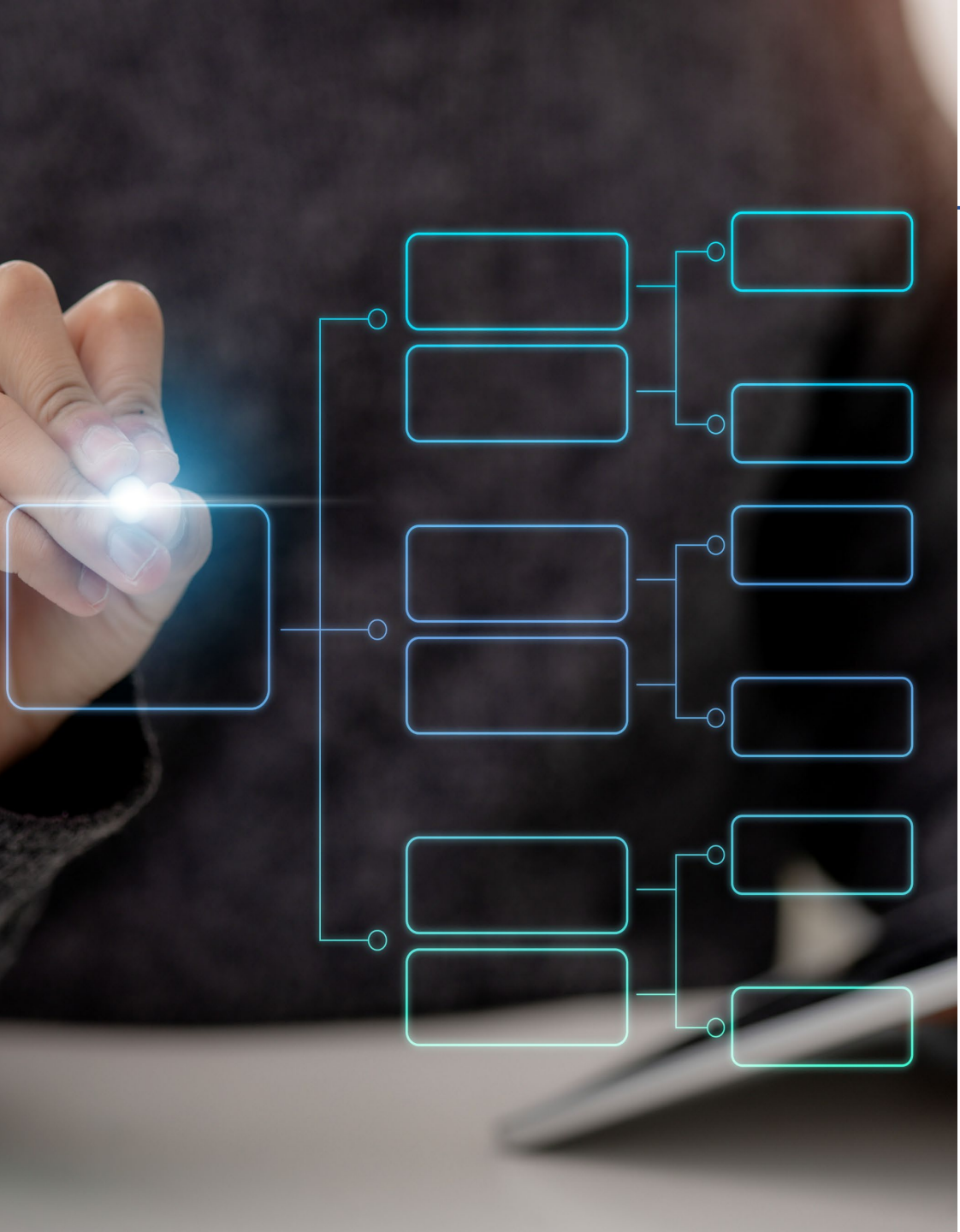
Workflow

The workflow of the system follows these steps:

1. User Input:

- The user provides a voice command, such as "Add a new contact named John Doe to CRM."

2. Speech-to-Text (STT) Agent:

- The system converts the voice input into text.

3. LLM Agent:

- This agent processes the input text, understand the context using LLM, determining the task type (e.g., adding a new contact) and extracting key parameters (e.g., contact name and other key details) from the input text

4. Data Validation Agent:

- If any required information is missing (e.g., email or phone number), the system prompts the user to provide the missing details.

5. Task Execution Agent:

- The task is executed in CRM by interacting with the CRM API, completing actions like adding contacts, updating notes, or creating tasks.

6. Feedback:

- The system provides feedback to the user about the successful execution of the task.

Tech Stack

Libraries:

- speech_recognition: Converts speech to text.
- OpenAI: GPT-3.5-Turbo Model used.
- CRM: HubSpot pydantic: Defines state structure.
- langgraph: Manages the workflow between agents and orchestration

Databases:

- **MYSQL:** to persist user commands

Server:

- **Flask:** Web framework for handling HTTP requests.
- **React JS:** Frontend framework for building an interactive user interface.

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Results

Efficiency Gains:

The client experienced significant improvements in CRM task efficiency. The automation of tasks such as creating contacts, adding notes, and updating information in HubSpot drastically reduced the manual effort required.

Improved Accuracy:

Automated data entry minimized human errors such as missing or incorrect information, resulting in more accurate CRM records.

Time Savings:

Sales and support agents saved time on data entry, enabling them to focus on core business activities like lead nurturing and customer interaction.

Enhanced Lead Management:

Consistent and accurate updates to HubSpot allowed for better tracking of customer interactions, improving lead management and follow-up processes.

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Benefits

1. Automation of Repetitive Tasks:

Manual tasks such as creating contacts, updating notes, and retrieving information were automated, freeing up the team for higher-value activities.

2. Seamless User Experience:

The integration of speech-to-text and LLM allowed users to interact with the system naturally via voice commands, reducing the learning curve and improving user satisfaction.

3. Scalability:

The modular agent-based architecture allowed the system to scale as the company grew, enabling the addition of new functionalities without disrupting existing workflows.

Conclusion

The implementation of the AI-powered Sales Tasks Automation using LangGraph Agents provided the client with a scalable, efficient, and user-friendly solution for automating routine CRM tasks. This innovative system significantly improved lead management, increased accuracy, and freed up valuable resources, resulting in enhanced productivity and overall business performance.

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