

# Agentic AI Pioneer Program

Projects



# Projects Overview

In the Agentic AI Pioneer Program, participants will engage in real-world, hands-on projects designed to build practical skills and deepen their understanding of AI Agents. These projects cover diverse domains such as business research, customer engagement, sales automation, and advanced language models.

Through these exercises, learners will work with leading AI tools like LangChain, ChatGPT, Google Gemini, and GPT-4o to engineer intelligent agents capable of tackling complex tasks such as research analysis, customer support, product recommendations, and multimodal data processing. These projects not only focus on foundational skills but also introduce advanced concepts like multi-user conversational systems and Retrieval-augmented Generation (RAG) systems.

By completing these projects, learners will gain the ability to design, deploy, and customize AI Agents, helping them solve real-world challenges and enhance their AI expertise.

## Validate your Business Plan with Generative AI

Ideate, validate, and create a business plan using prompting techniques in LLMs and RAGs.



## Build a Company Researcher Agent

Learn to create a simple Agent that researches a company and creates a short description.



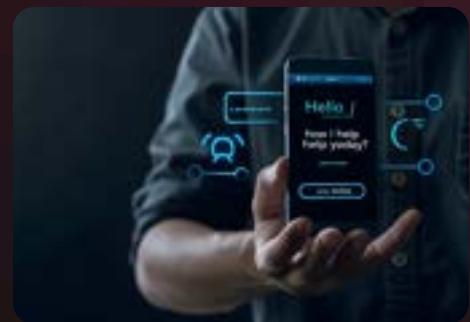
## Create a Resume Reviewer Agent

Build a smart Agent that can edit and review your resume content based on the parameters that you have set and produce enhanced quality suggestions to help your resume standout.



## Build a Customer Query Chatbot

Build a chatbot to take care of customer queries and provide relevant resolutions based on their problems.



## Design a Sales Agent

Build an advanced Agent that consists of information regarding various products of the company, it analyses the customer data to find the suitable product for them and create a pitch for them.



## Develop APIs for Company Data & Market Analysis using Flask

Develop four API endpoints will enable seamless data analysis: Company Information for key details, Stock Market Data for real-time metrics, Historical Market Data for past trends, and Analytical Insights for actionable intelligence.



## Review Analyst

Analyzing customer reviews for sentiment, identifying pros and cons, and generating email responses based on the analysis.



## Research Paper Analyst

Analyzing and summarizing research papers based on different personas and constraints to assist in extracting useful insights and generating summaries.



## Social Media Marketing Analyst

Creating marketing advertisements and content for a small enterprise by leveraging social media analytics.



## IT Support Analyst

Processing, translating, and analyzing IT support tickets, and generating appropriate responses for technical issues.



## Linking Multiple Chains Sequentially with LCEL

This mini-project demonstrates how to connect several LLM chains sequentially using LCEL. The output from one chain serves as input for the next in a series, allowing for the combination of intermediate outputs to generate a final result.



## Branching and Merging Chains with LCEL

This project shows how to work with multiple independent LLM chains in parallel, merging their outputs into a consolidated final result using a merge chain at the end.



## Routing Chains with LCEL

This project focuses on creating individual LLM chains that perform distinct tasks like summarizing or sentiment analysis. A router chain classifies user prompts and directs them to the appropriate chain automatically for task-specific results.



## Build a Multi-user Conversational Chatbot for Product Recommendations

Learn how to build a multi-user conversational chatbot, leverage memory to store conversations per user session and work on an interesting use case of recommending retail products to customers based on their queries.



## Prompt Engineering with ChatGPT on Real-world Tasks

Focuses on practical applications of prompt engineering using ChatGPT for tasks like summarization, entity extraction, sentiment analysis, synthetic data generation and more.



## Multimodal Prompt Engineering with Google Gemini

Involves prompt engineering using Google Gemini on multimodal data like text, images, audio and video.



## Multimodal Prompt Engineering with GPT-4o

Explores the capabilities of GPT-4o with multimodal tasks including handwritten text analysis, analyzing graphs and charts, analyzing images, audio and video.



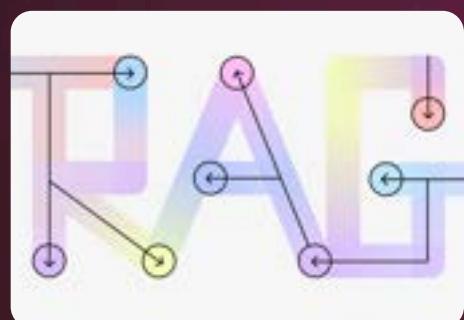
## Bonus: Prompt Engineering with Llama 3.1 & GPT-4o mini

Comparative analysis of prompt engineering using Llama 3.1 and GPT-4o on real-world tasks including few shot classification, coding, information extraction, question-answering, summarization and more.



## Simple RAG System with Sources

Building a basic Retrieval-augmented Generation system that cites sources alongside the generated responses.



## Multi-user Conversational RAG System

Developing a conversational RAG system that can handle multiple users and conversations with memory to provide relevant responses.



## Multimodal RAG System

A project focused on integrating multiple midex data formats (like text, tables and images) into a RAG pipeline to be able to leverage multimodal LLMs to answer questions using multimodal data.



## Build a Realtime Hacker News Analysis Agent from Scratch

Build a real-time AI agent that interacts with Hacker News, fetching stories, analyzing comments, and extracting insights from articles



## Build a Text2SQL AI Agent

Master the fundamentals of a Text2SQL system, develop a sequential Text2SQL AI workflow, and enhance it by building a Text2SQL Agentic AI system using ReAct and Tool-Use patterns.



## Build a Financial Analyst AI Agent

This module covers the essentials of financial analysis, explores key financial data providers, and develops a Financial Analyst ReAct Agentic AI to analyze stock data, retrieve indicators, track market news, provide insights, and answer queries on stocks and trends.



## Build a Simple Researcher Agent

Learn how to leverage search tools and build simple agentic workflows in LangGraph to build a researcher agent to help research on specific topics and help compose detailed reports



## Build a Recipe Recommendation System

Build a recommendation system that takes an ingredient and dietary restrictions as input, suggests a suitable recipe, and provides step-by-step instructions. The system should ensure the recipe meets the specified dietary needs.



## Market Researcher

Develop a Market Positioning Strategy that generates five distinct positioning ideas for a product launch, accompanied by analysis and strategic recommendations for each idea. The goal is to identify the most effective ways to differentiate the product in the market.



## Game Flow

Design a structured, event-driven flow for a game where the system randomly determines if the player wins or loses, and then displays the appropriate outcome based on the result.



## Build a Financial Analyst Tool-Use AI Agent

Develop an Agentic AI-powered Financial Analyst Tool to analyze stock data, track market trends, retrieve insights, and research relevant financial information.



## Build a Multi-User Conversational Financial Analyst Tool

Develop a conversational, multi-user Agentic AI Financial Analyst that analyzes stock data, market trends, financial indicators, and news while conducting web-based research.



## Build a Customer Support Router Agentic RAG System

Develop an intelligent Router Agentic RAG system to classify queries, detect sentiment, route issues, generate responses, and escalate when needed.



## Build a Reflective Self-Correcting Code Generation AI Agent

Develop a self-correcting Reflection Agentic AI for code generation that analyzes problems, generates code, iterates with feedback, and refines until correctness.



## Build a Planning Agent for Deep Research & Structured Report Generation

Develop a Planning Agent for deep research and structured report generation, leveraging parallel execution for research, writing, formatting, and compilation.



## Build a Reflective Dynamic Planning Agent for Multi-Step Complex Query Analysis

Develop a Reflective Dynamic Planning Agent for multi-step complex query analysis, breaking tasks into sub-steps, executing iteratively, updating progress, and refining responses.



## Build a Supervisor Multi-Agent System for Financial Research and Data Analysis

Develop a Supervisor Multi-Agent System for financial research and data analysis, coordinating researcher and coder agents to retrieve data, run code, generate insights, and refine responses.



## Build a Conversation Simulator with Conversable Agents

Simulate a conversation using Conversable Agents between the CMO and CEO regarding the benefits of B2B vs. B2C for an EdTech company specializing in project management courses.



## Develop a Marketing Plan for a Project using Sequential Chat

Develop an agentic system using Sequential Chat to identify optimal marketing channels and craft compelling ads for a startup's lightweight water bottle



## Design a Newsletter Agentic System with Tool Use

Design an agentic system with tool use to query a blog for the latest on AI Agents and Generative AI, and generate a curated newsletter for company employees



## Build a Website Scraper Agentic System with Code Execution

Design an agentic system for dynamic web scraping to extract and summarize promotional offers from competitor e-commerce platforms.



## Devolp a Multi-Agent System to Help the HR team resolve hiring requirements

Build an agentic system with group chat, stateflow and Nested Chat for HR to consult various departments about hiring requirements for a new PS5 game.



## Devlop Multimodal Agentic System for Image Analysis

Design a system that takes sports image as input and analyzes them.



## Strategic Expansion Discussion System with Swarm Orchestration

Simulate a conversation with each agent as a top management member at Axel Limited, discussing expansion into new markets and sharing independent perspectives smoothly.



## Fitness Progress Tracker

Develop an AI agent using CrewAI to track fitness goals and suggest tailored workout or nutrition plans.



## Advanced Images Generator

Create a system to automatically enhance prompts with contextual information for better image outputs.



## Personalized Book Recommendation App

Build an AI-powered personalized book recommendation system that remembers user preferences across sessions using Mem0 and CrewAI.



## Dynamic Travel Advisor

Design an automated travel advisor that generates, validates, and finalizes vacation plans seamlessly, with guardrails for quality assurance.



## Data Analyst Agent

Create a reusable pipeline for user-driven data analysis tasks



## Fraud Detection

Build an AI-powered workflow using CrewAI to analyze transactions, flag anomalies, and escalate suspicious activities effectively.



## Employee Onboarding Workflow

Build a streamlined onboarding workflow capable of managing multiple employees efficiently and accurately.



## Automated Document Summarization

Develop a system to summarize large text files while ensuring the output is realistic and high-quality



## Create a Crew with CrewAI CLI

Create and Test a Crew with CrewAI CLI



## Build an intelligent Router Agentic RAG System for a Healthcare Support Agent

Develop a system to process and index data using LangGraph, implement document retrieval mechanisms, and integrate LLMs for efficient query routing.



## Build an intelligent Agentic Corrective RAG System for a Research Agent

Develop an AI-powered research tool that retrieves, evaluates, and refines documents using LLM-based Reflection.



## Build an intelligent Agentic Adaptive RAG System for a Research Agent

Build an Agentic Adaptive RAG System that analyzes user queries, routes them to the best workflow (Web Search or Vector DB), and uses reflection and corrective RAG patterns to generate optimal responses.



## Creating Search Assistant Agents

Build two Assistant Agents for ChromaDB collections using AutoGen. Define the parameters of the AssistantAgent creation function.



## Creating Search Execution Agents

Develop two User Proxy Agents to execute functions. Explain the role of User Proxy Agents and define parameters for their creation.



## Creating GroupChat and GroupChat Manager

Create GroupChat and GroupChatManager components. Define their roles and functionality in managing group interactions.



## Multi Agent Hotel Reservation System

Learn to develop a multi-agent IA system designed for effective query processing and hotel reservation



# Learn to Build these Powerful Agents and Lead the Era of Autonomous Intelligence!

[Enroll now](#)

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