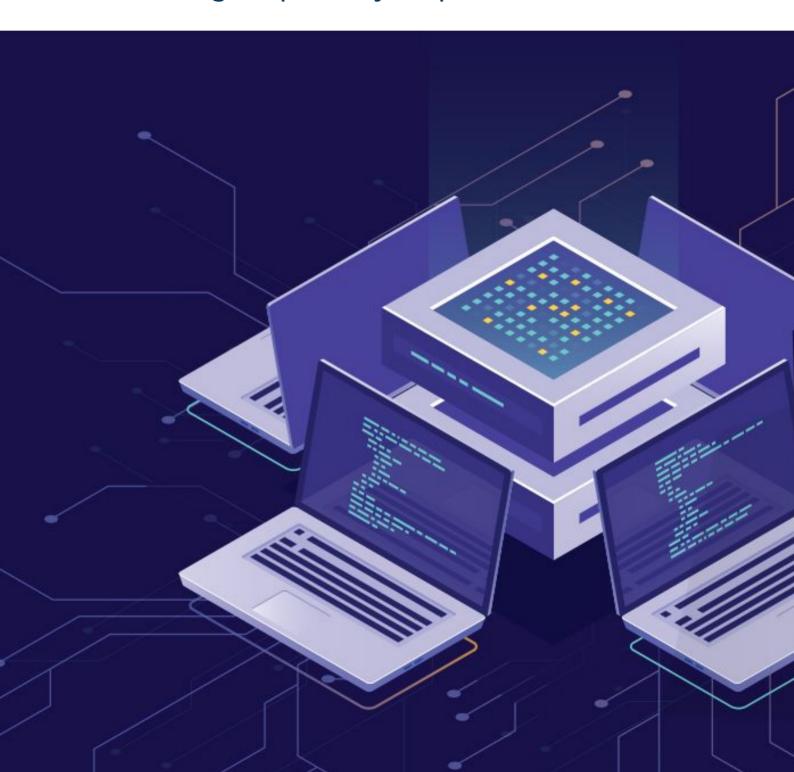**CERTIFICATE PROGRAM**

Hands-on Generative AI with Langchain and Python

2 Months Program | 10+ Projects | Live Classes

CloudxLab & Course

At Cloudxlab, we are building one of the best gamified learning environments to make technology learning fun and for life. More than 50,000 users across the world have been benefited by our signature courses on Artificial Intelligence. Our vision is to upskill people on high-end technologies like Machine Learning, AI, Big Data and now, Generative AI, and make them employable. In our Hands-on Generative AI course, participants delve into the practical applications of AI in everyday scenarios and explore the intricacies of building AI systems.

Designed for those **seeking hands-on experience** in solving real-world challenges using Generative AI, this specialization enables learners to harness the power of AI to **revolutionize their workflows**. From understanding the fundamentals to implementing advanced techniques, students will gain the expertise needed to develop AI systems that enhance productivity and efficiency.

Whether you aspire to optimize business operations or embark on groundbreaking AI projects, our course equips you with the skills to thrive in today's dynamic technological landscape.

Sandeep Giri

Founder at CloudxLab

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Why CloudxLab

Earn a Verified Certificate from CloudxLab

Learn Generative AI from industry experts and become expert in Generative AI domain

Online cloud lab for hands-on for real-world experience

Best-in-class support Throughout your learning journey

Lifetime course access

Work on real-world projects.

Interact with the international community of peers via the discussion forum.

Course Creators

Sandeep Giri

Founder at CloudxLab

Past: Amazon, InMobi, D.E.Shaw, DevRev

Course Developer

Know More

Venkat Karun

Staff Software Engineer

Google

Course Advisor

Know More

Shubh Tripathi

ML Engineer

CloudxLab

Course Advisor

Know More

Course Curriculum

1. **Python for Generative AI** (Self-paced)

   - Introduction to Python

   - Hands-on using Jupyter on CloudxLab

2. **Machine Learning Applications & Landscape** (Self-paced)

   - Introduction to Machine Learning

   - Machine Learning Applications

   - Different types of Machine Learning - Supervised, Unsupervised, Reinforcement

3. **Building end-to-end Machine Learning Project** (Self-paced)

   - Frame the problem and look at the big picture

   - Get the data

   - Explore the data to gain insights

   - Prepare the data for Machine Learning algorithms

   - Explore many different models and short-list the best ones

   - Present the solution, Launch, monitor, and maintain the system

4. **How does a Machine Learn?**

   - Introduction to Neural Networks

   - Working of Neural Networks

5. **Introduction to Natural Language Processing**

   - How model generates word

   - Applications of Natural Language Processing

Course Curriculum

6. **Word Embeddings**

   ○ How machines represent words?

   ○ Significance of embeddings

   ○ Similarity measures of embeddings

   ○ Sentiment Analysis with LLMs – **Live Project**

7. **Generative Pre-trained Transformer(GPT)**

   ○ Attention Mechanism

   ○ Transformer Architecture and components

   ○ Transfer Learning

   ○ Building your own GPT from scratch using Tensorflow – **Live Project**

8. **OpenAI ChatGPT**

   ○ Introduction to ChatGPT

   ○ ChatGPT Architecture and Training

9. **Prompt Engineering**

   ○ Art of Prompt Engineering

10. **Vector Databases**

    ○ Introduction to Vector Databases

    ○ Architecture of Vector Databases

    ○ Indexing Techniques

    ○ Distance Metrics and Similarity Measures

    ○ Nearest Neighbor Search

    ○ Open Source Vector Databases:- **Chroma** and **Milvus**

Course Curriculum

11. **Langchain**

    ○ Introduction to Langchain

    ○ The building blocks of LangChain:- Prompt, Chains, Retrievers, Parsers, Memory and Agents

    ○ Building a **RAG** based chat agent – **Live Project**

    ○ Building a Text to SQL query generator – **Live Project**

    ○ Building a RAG based chat agent web app using Flask – **Project**

12. **Stable Diffusion** (Self-paced)

    ○ Introduction to Stable Diffusion

    ○ Stable Diffusion Components

    ○ Diffusion Model

    ○ Stable Diffusion Architecture and Training

13. **Gen AI with APIs**

    ○ Hands-on with commonly used Gen AI APIs such as **GPT**, **DALL-E**, **Whisper**, **Midjourney**, etc.

    ○ Developing a Voice-Controlled RAG Chat Agent App – **Live Project**

    ○ Group mobile app reviews to generate clean actionable insights using GPT– **Live Project**

    ○ Building an **OpenAI agent** to automate tasks – **Live Project**

    ○ Building a QR Code AI Art Generator – **Live Project**

    ○ Building an image editor to edit images using text – **Live Project**

14. **Use of Common AI tools for automating daily tasks**

Projects

1. **Building end-to-end Machine Learning Project**

    ○ In this project we will build a machine learning model to predict housing prices using California Housing data.. We will learn various data manipulation, visualization and cleaning techniques using various libraries of Python like Pandas, Scikit-Learn and Matplotlib. This project covers building a Machine Learning project end-to-end.

2. **Performing Sentiment Analysis with LLMs**

    ○ In this project, we will use **OpenAI embeddings** to conduct sentiment analysis on customer reviews. By exploring the capabilities of LLMs, we aim to extract nuanced sentiment from textual data, providing valuable insights for businesses to enhance customer satisfaction and decision-making.

3. **Building your own GPT from scratch using Tensorflow**

    ○ In this project we will build our GPT from scratch. Then we will train it on the **Shakespear** data. The result will be a language model capable of generating text with a distinctive Shakespearean flair.

4. **Building a RAG based chat agent with Langchain and OpenAI**

    ○ In this project, we'll integrate RAG (Retriever-Augmented Generation) with Langchain to develop a sophisticated chat agent. Leveraging Chroma as a vector store, we'll store and retrieve relevant data based on user inquiries. This data will be seamlessly passed to GPT, enabling the generation of accurate and contextually relevant responses to customer queries.

Projects

5. **Building a RAG based chat agent web app using Flask**

    ○ Create a user-friendly web application using Flask that integrates our RAG-based chat agent that we created in the previous project. Users can interact with the chat agent directly on the web, asking questions and receiving responses generated by advanced language models.

6. **Building a Text to SQL Query Generator using Langchain**

    ○ This project enables the generation of SQL queries from natural language prompts. By providing the database schema and the user's query, the system utilizes GPT to generate SQL queries tailored to the user's needs. Execute the generated queries on your MySQL database effortlessly, simplifying the process of retrieving data through intuitive natural language interactions.

7. **Developing a Voice-Controlled RAG Chat Agent App**

    ○ This project extends our existing RAG-based chat agent to incorporate voice commands. By integrating **text-to-speech** and **speech-to-text** functionalities, users can engage in voice conversations with the chat agent. Enhance user experience and accessibility by enabling intuitive voice interactions, fostering seamless communication between the customer and the chat agent.

Projects

8. **Group mobile app reviews to generate clean actionable insights**

   ○ This project focuses on **clustering** mobile app reviews to extract meaningful insights. Through clustering techniques, we'll organize reviews into groups, allowing us to identify key areas for improvement or action. By analyzing these insights, our company can prioritize enhancements and address user concerns effectively, fostering continual improvement and enhancing user satisfaction with our mobile app.

9. **Building an OpenAI agent to automate daily tasks**

   ○ Build your own **OpenAI-powered assistant** to tackle daily tasks. Choose routines, train on your language, and watch it streamline your life. Ideal for busy professionals and AI enthusiasts.

10. **Building a QR Code AI Art Generator**

   ○ This project aims to generate QR codes with artistic designs. By leveraging the **Midjourney** and **DALL-E** APIs, we'll infuse creativity into QR code generation, transforming them into visually appealing artworks.

11. **Building an image editor to edit images using text**

   ○ This project focuses on creating an application for editing images using natural language commands. Leveraging the Midjourney and DALL-E APIs, users can manipulate images through text input, enabling intuitive editing processes.

Course Details and Fees

Please find more information about the course and fees here:

[Hands-on Generative AI with Langchain and Python](#)

Our Esteemed Customers

For Further Details

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