upGrad

Advanced Certificate Program in

Generative AI

100% Project-based Program

Deploy 6+ AI apps in 16 weeks

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The Era Of Generative AI

THE ERA OF GENERATIVE AI

The world is at the cusp of Generative AI rapidly changing the world as we know it. At
upGrad, we've always believed in imparting learners the skills necessary to thrive in the fast-evolving world of technology. We are hence quite thrilled to pioneer a structured way of learning to build Generative AI enabled applications - and with 100% real-world project-based curriculum.

Learners will delve into the fascinating realm of using Artificial Intelligence to build practical applications like conversational AI chatbots, image creators, content recommenders, and sales assistants, amongst others, to solve real-world challenges. Dive into this brave new world of Generative AI and Large Language Models with us, and watch yourself transform into a 10x tech professional.

" As an organisation that asks professionals to stay updated with the latest skills, we had to be one of the first to teach Generative AI. With this move, we are excited to witness the impact that Generative AI will have on the future, as well as the value our learners will bring to the field with this essential skill."

Mayank Kumar, Co-founder & MD, upGrad

PROGRAM OVERVIEW

Build your **own GenAI application**

5+ hands-on projects

Refresher **python fundamentals**

Live Masterclass from GenAI industry pioneers

Student support is available 7 days a week, 24*7.

No cost EMI options

60+ learning hours

WHY CHOOSE GENERATIVE AI?

Upskilling in Generative AI offers Indian professionals a competitive edge. With India's growing tech industry and widespread AI adoption, mastering Generative AI opens doors to lucrative career opportunities. Professionals can become valuable assets to organizations seeking innovative solutions, creative content generation, and enhanced customer experiences.

Generative AI skills directly impact industries relevant to Indian professionals. In computer vision, professionals can contribute to advanced image recognition systems autonomous vehicles, and healthcare diagnostics. In natural language processing, they can enhance language translation tools, conversational AI agents, and sentiment analysis for customer feedback. Upskilling in Generative AI empowers professionals to revolutionize these industries and drive technological advancements in India.

Upskilling in Generative AI establishes Indian professionals as experts in a global market. By adding this specialization, professionals can work on cutting-edge projects, collaborate with international teams, and contribute to groundbreaking research. With their unique skill set, professionals stand out in a highly competitive landscape, attracting lucrative job opportunities within India and abroad.

ABOUT
GENERATIVE AI

Generative AI, an exciting and rapidly evolving field, offers immense opportunities for Indian working professionals looking to enhance their expertise in artificial intelligence. It focuses on developing intelligent systems capable of generating new and original content, such as images, text, and music. By leveraging deep learning and neural networks, generative AI enables machines to exhibit human-like creativity and problem-solving skills.

Generative AI has found wide-ranging applications across industries, including computer vision, natural language processing, and the creative arts. In computer vision, generative models can create realistic images and transform existing ones, while in natural language processing, they enable text generation and language translation. For Indian artists and designers, generative AI provides innovative tools for visual and auditory content creation, transforming the creative landscape.

Our Certificate Program in Generative AI caters specifically to Indian working professionals seeking to broaden their understanding and practical skills in this exciting field. Through a comprehensive curriculum, we cover the fundamentals, algorithms, and advanced techniques of generative AI. Our program emphasizes hands-on learning, real-world case studies, and interactions with industry experts, ensuring that students gain practical experience and stay updated with the latest developments in the field.

Embark on a transformative journey into the world of Generative AI and unlock the potential of artificial creativity. Join our program to gain valuable insights, practical skills, and a competitive edge in the dynamic landscape of AI.

APPLICATION BASED PROJECTS

Project	GenAI Tools	Programming Tools
Create ShopAssist AI: A Conversational chatbot that provides shopping recommendations to users based on their preferences	ChatGPT, GPT 3.5/4, OpenAI API, Flask	Python, Jupyter/Colab Notebooks, Flask, Gradio, Excel, Pandas, sklearn, NLTK
Create Mr. HelpMate AI: A customer facing Chatbot that answers questions by scanning organisation's custom data	Embeddings, ChromaDB, Vectorstore, Huggingface	
Create Semantic Spotter: Mr HelpMate AI on steroids.Build a chat-based knowledge retrieval system that answers questions by analyzing multiple sources of data	Langchain, LlamaIndex, Huggingface, Embeddings, Lamini	
Scale Mr. HelpMate AI: Scale HelpMate AI using cloud services	AWS services, Embeddings, ChromaDB, Vectorstore, Huggingface	
Create Pixxelcraft AI: Enable and fast-track digitization for online e-commerce businesses by generating high-quality images for a large product portfolio	GPT 3.5/4, Open AI, Stable Diffusion	
Create Shrewdnews AI: Automate news recommendations using ChatGPT 4 powered ML pipelines	GPT 3.5/4, Open AI, Embeddings	

INSTRUCTORS

Behzad Ahmadi

Machine Learning Engineer at Meta

An M. Tech graduate and PhD from Jersey Institute of Technology, Behzad possesses tremendous years of experience in Data Science and ML

Georgios Ouzounis

Head of AI Research at Atlas AI

Technologist and visionary with over 22 years of experience and serving as the head of ML Engineering and at Atlas AI in California, USA

Kshitij Jain

AVP, Data Science & ML Programs, upGrad

Kshitij is an Associate Vice President at upGrad who leads the learning experience and development of Data Science, Machine Learning and AI programs and projects.

Ankush Chopra

Director at Tredence Inc.

Ankush is an M. Tech graduate from IIT Kanpur and has 10+ Years of hands-on Data Science experience delivering data and ML solutions for fortune 500 clients, across Telecom, Retail, Healthcare, and Finance industry.

CURRICULUM

Programming 101 **4 Weeks** **Recorded**

Introduction to Python and Programming

Python Data Types, Variables, Operators, Data Structures

Python Programming Constructs: Conditionals, Loops, Functions

UDFs, Best Coding Practices and Exception Handling

Advanced Text Processing using Pandas

Python for Data Science and Pandas: Working with relational databases, Data Cleaning, Preprocessing, Analysis

Basics of Linux: Commands, Setting up Local Environment

CURRICULUM

Create ShopAssistAI | **6 Weeks** | **Recorded**

Define the different components of the bot and design the workflow for creating the bot

Understand the working of LLMs like GPT3 that power ChatGPT: Attention Mechanisms, Transformers, Reinforcement Learning, RLHF among others

Apply prompting techniques to create prompts for asking questions and evaluating the customer's response

Establish **metric(s)** to measure model performance

Prompt Engineering: Improve the assistant's responses by applying **simple (non-reasoning) prompting techniques**

Prompt Engineering: Improve the assistant's accuracy by applying **Chain of Thought reasoning-based prompting techniques**

Transfer learning: Apply the same principles to other problems in your domain

Deploy and launch ShopAssistAI application on Flask

Iterate and **improve the UI** of the app using ChatGPT's code writing capabilities

CURRICULUM

Create Mr.HelpMate AI **3 Weeks** **Recorded**

Understand various search techniques and the generative search paradigm

Understand the working of embeddings and how they help in **semantic search**

Create and analyse embeddings for semantic search

Understand the entire semantic search pipeline including chunking, embedding, and retrieval

Create embeddings for large documents by creating **chunks**

Scale the Q/A system by making use of vectorstores like **ChromaDB**

Embed, **index** large documents and search in Vectorstore

Integrate LLM chat models like GPT with the semantic search to build a retrieval augmented generation system that directly responds to user queries

Experiment with different vectorstores, search and index algorithms and LLMs to improve the chatbot

CURRICULUM

SemanticSpotter **4 Weeks** **LIVE**

Define the components of the knowledge retrieval system and design the workflow

Explore how LangChain/LLamaIndex can connect the different components of the system

Understand the different parts of LangChain - Models, Prompts, Indexes, Chains, Memory and Agents

Explore the different **tools** in LangChain and initialise an **agent** that uses the tools to read different types of files or data present in the company database

Build the backend for system using **Vectorstore** options present in LangChain

Divide the documents into chunks and apply the LLM to create the embeddings and extract entity for the chunks of document and store them in the Vectorstore

Construct the **Search Index and Entity Store** and create a functionality to update it with every question that the user asks

Use the **Chain** functionality of LangChain to connect all the components

Build data indexes in LlamaIndex for efficient consumption of LLMs

Create **query engines, chat engines and data agents**

Integrate **LangChain and LlamaIndex** together

Evaluate the results and improve them by **experimenting** with different LLMs, indexing and embedding algorithms

Apply **fine-tuning** using OpenAI APIs to train an LLM on your custom data

Learn the best practices for fine tuning OpenAI APIs

Apply **Low-Rank Adaptation of Large Language Models (LoRA)** while finetuning to accelerate training of large models while consuming less memory

Explore other agents and tools to improve the system like adding features like automatic email notifications on some issues, etc.

CURRICULUM

Scale & Deploy Generative AI Systems **2 Weeks** **LIVE**

Explore the Generative AI services offered by various cloud services

Modify the workflow design of a knowledge retrieval system for scalability

Identify the cloud services required for creating the scalable system

Expose the system through a chat based front end to the user

Future Developments in Generative AI

Mitigating risks in AI: Responsible AI

RLHF as a Product to train your own LLM

Multimodal Learning: Audio, Image, Text, Heatmap among others within a LLM

CURRICULUM

Create PixxelCraft AI | **2 Weeks** | **4 LIVE MASTERCLASSES**

Understand how images are stored and manipulated digitally and work on **image processing** tasks

Understand the process by which **artificial neural networks** and their variants such as **convolutional neural networks** handle image analysis

Understand and implement legacy image generation models such as **variational autoencoders** and **generative adversarial networks**

Understand the components of **diffusion** models and the process by which images are generated and work on building a **stable diffusion pipeline** component-by-component

Set up a simple stable diffusion pipeline and create suitable **prompts for image generation** and use the model to generate relevant images

Use an **image generation model** and a **language generation model** to build an **application** that solves a real-world use-case problem

CURRICULUM

Create ShrewdNews AI | **1 Week** | **2 LIVE MASTERCLASSES**

Understand **prompting for code generation** and generate code for data science tasks in a larger ML problem

Automate ML workflows using language generation models including data preprocessing and machine learning modelling

Use **vector embeddings** to solve a real-world use-case problem based on semantic similarity

Fine-tune language generation models for a particular problem statement and **evaluate** the model

TOTAL DURATION **22 WEEKS**

ABOUT UPGRAD

upGrad is an online education provider that helps individuals to develop their professional potential in the most engaging learning environment. Online education is a fundamental and much-needed disruption that will have a far-reaching impact. At upGrad, we are working towards transforming this online education wave into a tsunami! We are taking a full-stack approach of leveraging content, technology, marketing and services to offer quality education at scale in partnership with corporates and academics for a rigorous and industry-relevant program.

upGrad is widely recognized as one of the pioneers of Artificial Intelligence & Data Science education in India. We have been at the forefront of offering industry-relevant programs and courses in the field of data science and analytics.

We incorporate practical hands-on projects and case studies to provide students with real-world experience and enhance their skills.

upGrad's Artificial Intelligence & Data Science programs have become one of the most popular programs due to the industry relevance, quality curriculum, and personalized support provided. We have helped many professionals upskill or transition into data science, machine learning & AI roles, contributing to the growth of the field in India.

Our aim is simple:
We strive to create high-impact, on-campus hands-on experiences that prepare students for meaningful and productive careers.

Ronnie Screwvala
Co-founder and Executive Chairman

upGrad

ADMISSION AND ENROLLMENT

Duration
4.5 months (Includes 1 month optional python programming bootcamp)

Program Start Date:
Please refer to the website for the program start dates

Program Fees
Please refer to the website for the program fee, and connect with our counselor to ascertain your scholarship eligibility

Eligibility
Basic Python Proficiency

Weekly commitment
10 hrs/week

Selection Process:

STEP-1:

Complete your Application
Fill the details required for your successful application.

STEP-2:

Review and Shortlisting of Suitable Candidates
Upon selection, an o er letter will be sent to you confirming your admission to the Advanced Certificate Program in GenerativeAI

STEP-3:

Claim your seat
Claim your seat by paying the block amount. You may also avail assistance from our loan partners. Your journey
to be a GenAI engineer begins now!

Disclaimer: Program fee and payment options are subject to change. Please refer to the website for updated details or speak to our admission counsellor.

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