Course Name	: **Google Gemini AI: Python API Masterclass**
Duration	: **2 Days (Physical Classroom / Virtual Live Instructor)**
Skill Level	: **Beginner**

COURSE DESCRIPTION:
Unlock the power of advanced AI with our "Google Gemini AI: Python Mastery" course. In this comprehensive two-day program, you'll master Google's Gemini AI Python API through expert-led insights and hands-on learning. Starting with a Python crash course, you'll build a solid programming foundation before diving into the architecture and capabilities of Gemini AI. Explore the power of Large Language Models (LLMs) for text generation, develop state-of-the-art chat models, and learn essential configuration techniques to optimize performance.

On the second day, delve into advanced applications with modules on integrating visual data with NLP, understanding vector embeddings, and implementing Retrieval Augmented Generation (RAG). Practical coding sessions will guide you in creating compelling AI-generated text, building personalized conversational agents, and enhancing AI responses with dynamic external knowledge sources. Designed for developers, data scientists, and AI enthusiasts, this course offers a flexible learning path to help you integrate advanced AI features into your applications and expand your expertise in machine learning.

WHAT WILL YOU LEARN?
In this course, you'll learn the fundamentals of using Google's Gemini AI Python API, starting with a solid foundation in Python programming. You'll gain insights into the architecture and capabilities of Gemini AI, including how to leverage Large Language Models (LLMs) for text generation and chat models. You'll master essential techniques for configuring and optimizing AI models, integrate visual data with natural language processing (NLP), and understand the concept of vector embeddings. Additionally, you'll explore advanced topics like Retrieval Augmented Generation (RAG) to enhance AI responses by dynamically incorporating external knowledge. Through hands-on coding sessions and practical exercises, you'll be equipped to create compelling AI-generated content, build personalized conversational agents, and implement cutting-edge AI features in your applications.

PREREQUISITE:
Beginners are welcome, as we delve into the foundational aspects of Python programming.

METHODOLOGY:
This program will be conducted with interactive lectures, PowerPoint presentations, discussions, and practical exercises. This course can be conducted as instructor-led (ILT) or virtual instructor-led training (VILT).

JOB SCOPE:
Upon completion of this course, candidates may pursue the following career paths:

- AI Developer
- Chatbot Developer
- LLM Developer
- NLP Engineer

MODULE 1: PYTHON CRASH COURSE
- Welcome
- Basics of Python Programming
- Installing Python and Setting Up the Environment
- Variables, Data Types, and Operators
- Control Structures: Conditionals and Loops
- Functions and Modules
- Working with Libraries and Packages
- Basic File Handling
- Introduction to Jupyter Notebooks

MODULE 2: INTRODUCTION TO GEMINI AI & LLM's
- Overview of Gemini AI
- Introduction to Gemini AI by Google
- Key features and capabilities
- Applications of Gemini AI in various industries
- Understanding Large Language Models (LLMs)
- What are LLMs?
- How LLMs are trained
- Use cases and examples of LLMs

MODULE 3: MASTERING TEXT GENERATION
- Introduction to Text Generation
- How text generation works in Gemini AI
- Practical applications of text generation
- Hands-On Coding: Generating Text
- Setting up the Python environment
- Using the Gemini AI Python API to generate text
- Adjusting tone, style, and context
- Real-world examples and exercises
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MODULE 4: DEEP DIVE INTO CHAT MODELS
- Understanding Chat Models
- How chat models function in Gemini AI
- Components of a chat model
- Fine-Tuning Chat Models
- Customizing models for specific applications
- Practical tips for fine-tuning
- Hands-On Coding: Building a Chatbot
- Creating a conversational agent
- Interactive coding session with step-by-step guidance

MODULE 5: CONFIGURING GEMINI AI
- Essential Configuration Parameters
- Overview of configuration settings
- Adjusting parameters for optimal performance
- Performance Optimization
- Strategies for enhancing model accuracy and efficiency
- Common pitfalls and how to avoid them

MODULE 6: GEMINI VISION: MULTIMODAL INPUTS UNLEASHED
- Integrating Visual Data with NLP
- Basics of multimodal AI
- Examples of applications combining text and images
- Hands-On Coding: Analyzing Images and Text
- Using Gemini AI to process and analyze visual data
- Practical examples and exercises

MODULE 7: DECODING VECTOR EMBEDDINGS
- Understanding Vector Embeddings
- What are vector embeddings?
- How embeddings represent text and images
- Techniques for Effective Embeddings
- Capturing semantic relationships
- Using embeddings in AI applications
- Hands-On Coding: Working with Embeddings
- Generating and utilizing embeddings in Python
- Practical exercises to solidify understanding

MODULE 8: RAG: RETRIEVAL AUGMENTED GENERATION
- Introduction to RAG
- What is Retrieval Augmented Generation?
- Benefits and applications of RAG in AI
- Implementing RAG
- Integrating external knowledge sources
- Real-world examples and case studies
- Hands-On Coding: Enhancing AI Responses with RAG
- Building a RAG-enabled model
- Hands-on coding and implementation

CONCLUSION
- QA
- Review of key concepts and techniques
- Feedback

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