

# ML, AI, Generative AI Prompt Engineering Training

*COURSE CONTENT*

## GET IN TOUCH



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## About Multisoft

Train yourself with the best and develop valuable in-demand skills with Multisoft Systems. A leading certification training provider, Multisoft collaborates with top technologies to bring world-class one-on-one and certification trainings. With the goal to empower professionals and business across the globe, we offer more than 1500 training courses, which are delivered by Multisoft's global subject matter experts. We offer tailored corporate training; project Based Training, comprehensive learning solution with lifetime e-learning access, after training support and globally recognized training certificates.

## About Course

The ML, AI, and Generative AI Prompt Engineering Training by Multisoft Systems is a specialized program designed to equip learners with the skills required to interact effectively with AI models through prompt design. As AI technologies like ChatGPT, Bard, and other LLMs become integral to various industries, mastering prompt engineering is essential for maximizing their potential.

## Module 1: Introduction to ML

- ✓ AI Vs ML Vs DL Vs DS
- ✓ Types Of ML Techniques
- ✓ Supervised vs unsupervised and semi supervised and reinforcement learning
- ✓ Introduction to Artificial Intelligence
- ✓ Applications of Artificial Intelligence o AI Project Life Cycle
- ✓ AI Domains and Models o AI Ethics and Bias

## Module 2: Machine Learning – Supervised

- ✓ Introduction to Machine Learning
- ✓ Data Processing for Machine Learning
- ✓ Algorithms for Machine Learning
- ✓ Supervised (Regression and Classification) o Linear Regression
- ✓ Logistic Regression o kNN
- ✓ Decision Tree and Random Forest o Support Vector Machines
- ✓ Naive Bayes

## Module 3: Machine Learning - Unsupervised

- ✓ Unsupervised (Clustering, Dimensionality Reduction) o K Means Clustering
- ✓ Hierarchical Clustering

## Module 4: Deep Learning & AI using Python

- ✓ Case Study
- ✓ Deep Learning Overview
- ✓ The Brain vs Neuron
- ✓ Introduction to Deep Learning
- ✓ Introduction to Artificial Neural Networks
- ✓ The Detailed ANN
- ✓ The Activation Functions

- ✓ How do ANNs work & learn?

## Module 5: Convolutional Neural Networks

- ✓ Convolutional Operation
- ✓ Relu Layers
- ✓ What is Pooling vs Flattening?
- ✓ Full Connection
- ✓ SoftMax vs Cross Entropy
- ✓ Building a real world convolutional neural network for image classification

## Module 6: What are RNNs – Introduction to RNNs

- ✓ Recurrent neural networks rnn
- ✓ LSTMs understanding LSTMs
- ✓ Long short-term memory neural networks lstm in python

## Module 7: Restricted Boltzmann Machine (RBM) and Autoencoders

- ✓ Restricted Boltzmann Machine
- ✓ Applications of RBM
- ✓ Introduction to Autoencoders
- ✓ Autoencoders applications
- ✓ Understanding Autoencoders
- ✓ Building a Autoencoder model

## Module 8: Tensorflow with Python

- ✓ Introducing Tensorflow
- ✓ Introducing Tensorflow
- ✓ Why Tensorflow?
- ✓ What is TensorFlow?

- ✓ Tensorflow as an Interface
- ✓ Tensorflow as an environment
- ✓ Tensors
- ✓ Computation Graph
- ✓ Installing Tensorflow
- ✓ Tensorflow training
- ✓ Prepare Data
- ✓ Tensor types
- ✓ Loss and Optimization
- ✓ Running TensorFlow programs

## **Module 9: Building Neural Networks using Tensorflow**

- ✓ Tensors
- ✓ Tensorflow data types
- ✓ CPU vs GPU vs TPU
- ✓ Tensorflow methods
- ✓ Introduction to Neural Networks
- ✓ Neural Network Architecture
- ✓ Linear Regression example revisited
- ✓ The Neuron
- ✓ Neural Network Layers
- ✓ The MNIST Dataset
- ✓ Coding MNIST NN

## **Module 10: Deep Learning using TensorFlow**

- ✓ Deepening the network
- ✓ Images and Pixels
- ✓ How humans recognise images?
- ✓ Convolutional Neural Networks
- ✓ ConvNet Architecture

- ✓ Overfitting and Regularization
- ✓ Max Pooling and ReLU activations
- ✓ Dropout
- ✓ Strides and Zero Padding
- ✓ Coding Deep ConvNets demo
- ✓ Debugging Neural Networks
- ✓ Visualising NN using Tensorflow
- ✓ Tensorboard

## Module 11: Introduction to Generative AI

- ✓ What is Generative AI?
- ✓ Why are Generative models required?
- ✓ Understanding generative models and their significance
- ✓ Generative AI v/s Discriminative Models
- ✓ Recent advancements and research in generative AI
- ✓ Generative AI end to end project lifecycle
- ✓ Key applications of generative models

## Module 12: Guide to Open AI and it's Ready to use Models with Application

- ✓ Introduction to OpenAI
- ✓ What is OpenAI API and how to generate OpenAI API key?
- ✓ Installation of OpenAI package
- ✓ Experiment in the OpenAI playground
- ✓ How to setup your local development environment?

## Module 13: Advanced Prompt Engineering Techniques

- ✓ Customising Prompts for Specific Use Cases
- ✓ Fine-tuning Language Models for Optimal Output

- ✓ Managing Prompt Complexity and Length
- ✓ Enhancing Control and Diversity in Generated Text

## **Module 14: Interpretability and Explainability**

- ✓ Importance of Interpretability in AI-Generated Outputs
- ✓ Techniques for Visualising and Understanding Model Responses
- ✓ Explainable AI in Prompt Engineering
- ✓ Addressing Bias and Fairness in AI-Generated Text

## **Module 15: Use Cases and Applications**

- ✓ Industry-Specific Applications of Generative AI
- ✓ Real-world Examples of Prompt Engineering Success Stories
- ✓ Identifying Opportunities for AI-Prompt Integration
- ✓ Challenges and Limitations in Deploying Generative AI Solutions

## **Module 16: Quality Assurance and Validation**

- ✓ Testing and Quality Control for AI-Generated Text
- ✓ Human-in-the-Loop Approaches to Validation
- ✓ Compliance and Regulatory Considerations
- ✓ Benchmarking and Performance Metrics for Prompted AI Models

## **Module 17: Practical Guide to LlamaIndex with LLMs**

- ✓ Introduction to LlamaIndex
- ✓ Difference between langchain and LlamaIndex
- ✓ Difference between Llama and LlamaIndex
- ✓ Setup of LlamaIndex in our local env
- ✓ How to use LLMs with LlamaIndex?
- ✓ Exploring Llamahub
- ✓ How to connect with external Data?

## Module 18: Machine Learning End to End Project

- ✓ Project#1: Loan Defaulter Prediction

## Module 19: GenAI End to End Project1

- ✓ Project#1: Medical Chatbot Project with Llama 2, Pinecone, Lang Chain & Deployment AWS

## Module 20: GenAI End to End Project2

- ✓ Project#2: Source Code Analysis with Lang Chain, OpenAI and Chroma DB & Deployment AWS