# AI/ML Bootcamp - Event Details

## Course Overview

**Course Name:** 🚀 Learn AI Skills That Get You Hired
**Instructor:** Vijender P (Alumnx Founder)
**Enrollment Fee:** ₹2,500

## Course Description

Latest AI/ML Course. Industry Backed. Job Focused.

Master AI and Machine Learning with hands-on projects using real tools like Google Colab, Hugging Face, and LangChain. Build portfolio-ready projects that showcase your skills to employers.

## Event Schedule

- **Duration:** 9th to 21st June 2025
- **Daily Schedule:** 7:00 PM to 8:00 PM (Monday to Saturday)
- **Total Duration:** 2 Weeks
- **Format:** Live Online Sessions
- **Total Sessions:** 10 Modules + 2 Interview Preparation Sessions

## Course Highlights

- Build ML & Deep Learning models using TensorFlow, PyTorch, and scikit-learn
- Work with real AI tools like Google Colab, Hugging Face, and LangChain
- Create apps using LLMs & AI agents with advanced prompt engineering
- Fine-tune models with LoRA & QLoRA techniques
- Launch portfolio-ready AI projects
- Learn RAG systems and Multi-Agent Systems
- Career support & mock interviews included
- Industry-backed curriculum by top AI professionals

## Detailed Course Modules

### Session 1: Introduction to AI and Machine Learning

**Duration:** 60 minutes

**Theory (20-25 min):**

- AI landscape overview

- Types of AI
- Machine learning fundamentals
- Industry applications
- AI ethics

**Practical (30-40 min):**

- Setting up Google Colab environment
- Working with key Python libraries (NumPy, Pandas, Matplotlib, scikit-learn)

**Assessment (5 min):**

- Quick knowledge check on ML terminology and frameworks

**Key Takeaways:** Data Science Pipeline, Jupyter Notebooks, GitHub integration, ML Ops fundamentals

## Session 2: Machine Learning Basics

**Duration:** 60 minutes

**Theory (20-25 min):**

- Supervised vs. unsupervised learning
- Common algorithms (Random Forest, SVM, K-means)
- Evaluation metrics

**Practical (30-40 min):**

- Building a classification model with scikit-learn on tabular data
- Feature importance analysis

**Assessment (5 min):**

- Review of model performance metrics (precision, recall, F1-score)

**Key Takeaways:** Cross-validation, Hyperparameter tuning, ML Pipeline, Feature engineering, Confusion matrix

## Session 3: Neural Networks and Deep Learning

**Duration:** 60 minutes

**Theory (20-25 min):**

- Neural network architecture
- Activation functions

- Backpropagation
- Deep learning principles

**Practical (30-40 min):**

- Implementing a neural network with TensorFlow/Keras and PyTorch
- Training visualization

**Assessment (5 min):**

- Neural network component identification and debugging

**Key Takeaways:** Gradient descent, Tensorboard, Loss functions, Overfitting, Regularization, Batch normalization

## Session 4: Deep Learning Architectures

**Duration:** 60 minutes

**Theory (20-25 min):**

- CNNs, RNNs, LSTM, GRU, and Transformer overview
- Architecture comparisons

**Practical (30-40 min):**

- Image classification with pre-trained models from TensorFlow Hub and PyTorch Hub

**Assessment (5 min):**

- Architecture selection for different use cases

**Key Takeaways:** Transfer learning, Model zoos, Feature extraction, Fine-tuning, Dataset augmentation

## Session 5: Introduction to Large Language Models

**Duration:** 60 minutes

**Theory (20-25 min):**

- LLM architecture
- Attention mechanisms
- Scaling laws
- Capabilities and limitations

**Practical (30-40 min):**

- Using HuggingFace Transformers and OpenAI APIs to interact with LLMs

**Assessment (5 min):**

- LLM application ideation and capability assessment

**Key Takeaways:** Zero-shot learning, Few-shot learning, Token limits, Context window, Hugging Face Hub

### Session 6: Prompt Engineering Techniques

**Duration:** 60 minutes

**Theory (20-25 min):**

- Effective prompt design
- Chain-of-thought
- Few-shot prompting
- Instruction tuning

**Practical (30-40 min):**

- Crafting prompts using LangChain PromptTemplates
- Implementing systematic prompting strategies

**Assessment (5 min):**

- Prompt improvement exercise and evaluation

**Key Takeaways:** System prompts, Role-based prompting, Output formatting, Jailbreaking prevention, Guardrails

### Session 7: Retrieval-Augmented Generation (RAG)

**Duration:** 60 minutes

**Theory (20-25 min):**

- RAG architecture
- Vector databases
- Semantic search
- Token optimization

**Practical (30-40 min):**

- Building a RAG system with LangChain, ChromaDB/Pinecone, and embeddings models

**Assessment (5 min):**

- RAG system performance evaluation

**Key Takeaways:** Chunking strategies, Document loaders, Embedding models, Hybrid search, Metadata filtering

## Session 8: AI Agents Fundamentals

**Duration:** 60 minutes

**Theory (20-25 min):**

- AI agent architecture
- ReAct framework
- Planning
- Tool usage
- LangChain Agents

**Practical (30-40 min):**

- Building an agent with LangChain that performs web searches and calculations

**Assessment (5 min):**

- Agent capability assessment and error analysis

**Key Takeaways:** Tool definitions, Function calling, Agent memory, Self-reflection, AutoGPT

## Session 9: Multi-Agent Systems and MCP

**Duration:** 60 minutes

**Theory (20-25 min):**

- Agent collaboration models
- Specialized roles
- Communication protocols
- Orchestration

**Practical (30-40 min):**

- Implementing a multi-agent system with LangChain, CrewAI or AutoGen

**Assessment (5 min):**

- Multi-agent system evaluation

**Key Takeaways:** Agent society, Hierarchical agents, Agentic workflows, CrewAI, AutoGen, Tool discovery

### Session 10: Model Fine-tuning and Customization

**Duration:** 60 minutes

**Theory (20-25 min):**

- Model adaptation approaches
- Parameter-efficient fine-tuning (LoRA, QLoRA, Adapters)

**Practical (30-40 min):**

- Fine-tuning a small model on domain-specific data with Hugging Face

**Assessment (5 min):**

- Fine-tuning strategy selection and evaluation

**Key Takeaways:** PEFT methods, Quantization, Distillation, RLHF, SFT (Supervised Fine-Tuning)

## Additional Sessions

**Interview Preparation Sessions (2 sessions):**

- Technical interview preparation
- Mock interviews with industry professionals
- Portfolio presentation skills
- Career guidance and job search strategies

## Registration Information

- **Platform:** Online registration through Alumnx platform
- **Payment:** ₹2,500 via Razorpay integration
- **Prerequisites:** Basic programming knowledge recommended
- **Certificate:** Certificate of Completion will be awarded to participants who meet the course requirements
- **Support:** Career support and mock interviews included

## Certification Requirements

To receive the **Certificate of Completion**, participants must:

- Attend at least 80% of the live sessions (8 out of 10 modules)
- Complete all practical assignments and assessments
- Participate in the final project presentation
- Successfully complete the interview preparation sessions

## Contact Information

**Phone:** +91 9346139833

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