



Artificial Intelligence (AI) and Machine Learning (ML)



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Introduction:

This advanced training course delves into the intricacies of Artificial Intelligence AI and Machine Learning ML, providing participants with a comprehensive understanding of advanced concepts, techniques, and applications. Designed for experienced professionals in the field, it will cover state-of-the-art developments, research trends, and practical implementations in AI and ML.

Targeted Groups:

- Data Scientists.
- AI and ML Engineers.
- Researchers in AI and ML.
- IT Professionals are seeking advanced knowledge in AI and ML.
- Advanced Computer Science Students.
- Industry Professionals are aiming to implement AI/ML solutions.

Course Objectives:

At the end of this course, the participants will be able to:

- Understand and apply advanced AI and ML algorithms.
- Implement and optimize complex models and architectures.
- Analyze and interpret large datasets using AI and ML techniques.
- Integrate AI and ML solutions into existing systems.
- Stay updated with the latest trends and research in AI and ML.

Targeted Competencies:

- Advanced algorithm design and implementation.
- Data analysis and visualization.
- Model optimization and performance tuning.
- AI/ML integration and deployment.
- Research and development in AI/ML.

Course Content:

Unit 1: Advanced Machine Learning Algorithms:

- Deep Learning Architectures.
- Convolutional Neural Networks CNNs.
- Recurrent Neural Networks RNNs.
- Generative Adversarial Networks GANs.
- Ensemble Methods.
- Bagging and Boosting.
- Random Forests.
- Gradient Boosting Machines.
- Reinforcement Learning.
- Q-Learning.
- Policy Gradients.
- Deep Reinforcement Learning.

Unit 2: Natural Language Processing NLP:

- Text Preprocessing Techniques.
- Tokenization.
- Lemmatization and Stemming.
- Advanced NLP Models.
- Transformers e.g., BERT, GPT.
- Seq2Seq Models.
- Applications of NLP.
- Sentiment Analysis.
- Machine Translation.
- Text Summarization.

Unit 3: Introduction to AI in Accounting and Finance:

- Overview of AI and its evolution in accounting and finance.
- Key concepts and terminologies in AI.
- Importance of AI in modern financial practices.
- Benefits and challenges of AI adoption in finance.
- Current trends and future outlook of AI in the industry.

Unit 4: Model Deployment and Production:

- Model Serving and Monitoring.
- Deploying Models with TensorFlow Serving.
- Monitoring Model Performance.
- Scalability and Performance.
- Distributed Computing with Spark.
- Parallel Processing Techniques.
- AI/ML in the Cloud.
- AWS SageMaker.
- Google AI Platform.

Unit 5: Ethics and Future Trends in AI/ML:

- Ethical AI and Bias Mitigation.
- Fairness in AI.
- Bias Detection and Correction.
- Legal and Societal Impacts.
- AI Regulations.
- Societal Implications of AI.
- Future Directions and Research.
- Quantum Computing in AI.
- Neuromorphic Computing.