

# AI, ML, DL and Gen AI for Leaders

ANI\_217 | Expert-Led Live | Automation and Insights | ⚙️⚙️⚙️

Course Duration: 4 hours

Artificial Intelligence (AI) is revolutionizing all aspects of the computer industry. The impacts of AI have been seen on a number of areas such as speech and image recognition. This course provides an overview of AI for leaders. AI is explored from a definition, underlying technology and use-cases perspective. It starts with an introduction to AI and data analytics. The course then moves to key AI use cases and the AI technologies of Machine Learning and Deep Learning. The course then moves to a discussion on how to build an AI model, some of the common tools, and the key challenges. The course concludes with a look at the future and the introduction of Generative AI and ways to augment foundation models with one's own data.

## Intended Audience

Leadership in Network Planning, Engineering, Performance, and Operations

## Objectives

After completing this course, the learner will be able to:

- Define Artificial Intelligence (AI), Machine Learning (ML) and Deep Learning (DL)
- Explore the key use cases for AI
- Sketch Machine Learning and Deep Learning ecosystem and key players at each layer
- Compare and contrast deep learning and machine learning
- List popular ML and DL models and their uses
- Define generative AI and list its benefits and challenges
- Show choices to augment foundation models with own data

## Outline

1. Introduction to AI
  - 1.1 Brief history and evolution of AI
  - 1.2 Importance of AI/ML/DL in business
  - 1.3 Key terms and definitions in AI/ML/DL
  - 1.4 AI and Automation Lifecycle
2. Overview of Automation with AI
  - 2.1 Automation and its need business
  - 2.2 Role of AI in automation
  - 2.3 Examples of AI-driven automation
3. Data Analytics
  - 3.1 Importance of data analytics
  - 3.2 Types of data to analyze
  - 3.3 Data preprocessing and cleaning
  - 3.4 Data Augmentation and Feature Extraction
  - 3.5 Overview of descriptive analytics
  - 3.6 Overview of predictive analytics
  - 3.7 Overview of prescriptive analytics
4. Introduction to Machine Learning
  - 4.1 Understanding the concept of ML
  - 4.2 Supervised and Unsupervised Learning
  - 4.3 Reinforcement Learning
  - 4.4 Training a Model and Backpropagation
  - 4.5 Gradient Descent, overfitting and underfitting
  - 4.6 Hyperparameter Tuning
  - 4.7 Determining Model Accuracy
  - 4.8 Role of ML in business applications
  - 4.9 What it MLOps and its benefits
5. DL and its Applications
  - 5.1 Understanding DL and Neural Networks
  - 5.2 Difference between ML and DL
  - 5.3 Artificial Neural Networks
  - 5.4 Feed Forward Networks
  - 5.5 Convolutional Neural Networks (CNN)
  - 5.6 Recurrent Neural Networks (RNN) and Long Short-Term Memory (LSTM)
  - 5.7 Use-cases for each techniques
6. Introduction to Generative AI
  - 6.1 Generative Adversarial Networks (GANs)
  - 6.2 Understanding the concept of GenAI
  - 6.3 GenAI and Prompt Engineering
  - 6.4 Potential GenAI Applications
  - 6.5 Options to augment GenAI with one's own data