AI, ML, DL, and Gen AI for Telecom Leaders

ANI_218 | Expert-Led Live | Automation and Insights | Expert
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. The telecom industry is no different. 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 (ML) and Deep Learning (DL). 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 within telecommunications 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 Machine Learning and Deep Learning models and their uses
- Define generative AI and list its benefits and challenges
- Show choices to augment foundation models with Telco's own data

Outline

1. Introduction to AI
1.1 Brief history and evolution of AI
1.2 Importance of AI/ML/DL in the telecom
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 in telecom
2.2 Role of AI in automation
2.3 Examples of AI-driven automation

3. Data Analytics in Telecom
3.1 Importance of data analytics in telecom
3.2 Types of data in telecom and 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 telecom
4.9 MLOps and its benefits

5. DL and its Applications in Telecom
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 Telecom use-cases

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 telecom applications of GenAI
6.5 Options to augment GenAI with one's own data

Award Solutions