

Applied AI and Machine Learning for Financial Regulators

Duration: 40 hours

Course Overview

This course provides a comprehensive introduction to Artificial Intelligence (AI) and Machine Learning (ML) with a focus on their application in bank supervisory and regulatory environments, particularly within central banks. Participants will explore the evolution of AI, key concepts, and the differences between AI-driven approaches and traditional analytics, along with practical use cases in financial services. The program covers fundamental machine learning techniques, including supervised and unsupervised learning, classification and regression models, data fundamentals, and model evaluation metrics. Learners will also gain hands-on understanding of data preparation, feature engineering, model selection, training and validation processes, and challenges such as overfitting. In addition, the course addresses critical aspects of AI risk management, including bias, fairness, governance frameworks, and the role of human oversight in AI systems. By the end of the training, participants will be able to identify suitable AI use cases for central banking operations, design and implement an AI/ML pipeline, and develop a structured plan for deploying and managing AI solutions within regulatory and supervisory processes.

Audience Profile

This course is designed for professionals working in central banks, financial regulatory authorities, and supervisory institutions who are interested in understanding and applying Artificial Intelligence (AI) and Machine Learning (ML) to enhance regulatory oversight and financial system monitoring. The target audience includes bank supervisors, financial analysts, risk management professionals, data analysts, policy makers, regulatory technology (RegTech) specialists, and IT professionals involved in financial regulation and supervisory processes. It is also suitable for decision-makers and managers responsible for digital transformation initiatives within financial institutions who want to explore how AI can improve data-driven decision-making, regulatory monitoring, and risk assessment. Participants are expected to have a basic understanding of financial systems and data analysis, but no advanced programming or prior AI expertise is required.

Session Agenda

Day 1: To introduce participants on Artificial Intelligence

- Discussion on AI concepts and evolution;
- Comparing AI and traditional analytics;
- Expound on AI in financial services;
- Elaboration on ethical AI, risks and governance
- Use cases

Day 2: To introduce AI & Machine Learning Fundamentals in enhancing Bank supervisory and regulatory processes

- Discussion on applicability of Machine Learning in Central Bank activities
- Use of AI and Machine learning in enhancing Bank regulatory processes
- Use of AI and machine learning in Monitoring Cryptocurrency operations
- Expounding on Supervised vs unsupervised learning;
- Classification & regression in AI
- Introduction on data fundamentals

- Expounding on Model lifecycle
- AI and Machine learning Evaluation metrics

Day 3: To analyse Data, Features & Model Development Methods

- Application of data science in central bank processes
- Preparation of Data
- Expounding on feature engineering
- Analysis of model selection
- Discussion on data training and validation
- Expounding on overfitting

Day 4: To analyse Data, Features & Model Development Methods

- To identify AI and machine learning risks
- Expounding on AI biasness & fairness
- Expounding on Machine learning model risk management
- Analysis of human-in-the-loop
- Expounding on AI governance frameworks

Day 5: To implement AI and Machine learning in central banks

- Selecting use cases for AI and Machine learning
- Building full pipeline
- Deployment and testing of AI and machine learning
- Documenting AI and machine Learning implementation plan