

Artificial Intelligence & Machine Learning in Banking & Financial Services

Master Class Training (3 day)



Preamble

The digital era is disrupting the banking and financial services landscape in a way that has never been experienced before. Much of the developments are being driven by robotics, the internet of things, and fintech anchored by computing power and smartphones. This hands-on Artificial Intelligence course provides practical insights into the concept and application of Artificial Intelligence (AI) and Machine Learning (ML) in the financial landscape.

It is aimed at incumbents who want to advance their careers in banking and financial services by applying contemporary technologies.

The course demonstrates, through case studies and practical examples, how one can use AI and ML to automate their services, improve customer service, reduce operational costs, and enhance accessibility to clients among other things with the overarching goal of maximizing returns and shareholder value.

Course Objectives

- Acquaint learners with basic concepts of AI and its applications;
- Appreciate the importance of AI and ML in banking and financial services;
- Familiarize yourself with the opportunities and challenges of AI;
- Learn how to present, visualize and interpret data to make informed decisions;
- Know the software's used in AI applications;
- Comprehend the usefulness of chatbots;
- Understand how to use features and reinforcement engineering to automate bank lending;
- Understand professional, regulatory, and policy issues arising from AI adoption.

Target Audience

- Bankers;
- Customer Consultants;
- Credit Officers;
- Bank Managers;
- Investment Managers;
- Traders;
- Investors;
- Fintech start-ups;
- Management Consultants;
- Regulators;
- Anyone interested in AI and ML technologies.

Course Outline:

Part I: Overview of Artificial Intelligence (AI)

1.1. Artificial Intelligence

- Introduction
- Taxonomy of AI, ML, DL
- Types of AI
 - Reactive
 - Limited Memory
 - Theory of Mind
 - Self-aware
- Branches of AI
- Historic Development of AI
- Enabling Technologies
 - Machine Learning
 - Deep Learning
 - Big Data
 - Natural Language Processing
 - Natural Language Generation
- Basic Components of AI
- Ethical Dilemmas Associated with AI

1.2. Types of Artificial Intelligence

- Logical Intelligence
- Probabilistic Intelligence
- Swarm Intelligence

1.3. How Artificial Intelligence is changing the Banking & Financial Services landscape

- Banking Chatbots
- Credit Risk Analysis
- Robotic Process Automation
- Robo-advisory Services

- Enhanced Customer Experience
- Fraud Detection
- Compliance Management
- Algorithmic Trading
- Risk Management
- Report Generation
- Other Applications of AI

1.4. Artificial Intelligence in the Banking Sector

- Opportunities & Challenges
- Ensuring a sound regulatory framework in the wake of AI

1.5. How does a machine learn?

- Unsupervised Machine Learning
- Supervised Machine Learning
- Semi-supervised Machine Learning
- Reinforcement Machine Learning

1.6. Coding Languages & Software's used in Artificial Intelligence

- SAS
- Python
- R
- LISP
- Prolog
- Java
- WEKA
- MS Excel

1.7. AI in Banking & Financial Services Case Studies

- Tyme Bank
- Bulder Bank

Part II: Data Analytics and Visualization

2.1. Data Gathering

- Data Collection
- Importance of Data Collection
- Data Collection Tools

2.2. Statistical Analysis

- Defining Statistical Analysis
- Levels of Measurement
- Measures of Central Tendency
- Measures of Dispersion

2.3. Data Exploration & Visualization

- Defining Data Exploration & Visualization
- Importance of Data Visualization
- Data Representation Methods

Part III: Supervised and Unsupervised Learning

3.1. Deterministic Models

- Regression Analysis

3.2. Clustering

- Defining Clustering
- Why Clustering?

3.3. Association Rules

- Association Rules Technique
- How Association Rules Work

3.4. Recommender Systems

3.5. K-Nearest Neighbor

- Determining Neighbors
- K-NN Algorithm

3.6. Decision Trees

- Learning a Decision Tree
- Decision Tree Classification Algorithm

Part IV: Natural Language Processing (NLP) & Natural Language Generation (NLG)

4.1. Introduction to NLP

- Defining NLP
- Importance of NLP

4.2. Extracting Data from Raw Text

- Chatbot Information Extraction & Visualization
- Group & Extract Related Information
- Entities Matching Predefined Lists
- Named Entities
- Entity Linking

4.3. Applications of Information Extraction

4.4. Natural Language Generation

Part V: Using features and reinforcement learning to automate bank lending

5.1. Defining Features Engineering & Reinforcement Learning

5.2. Using features and reinforcement learning to automate bank lending

5.3. AI modeling techniques

5.4. Metrics of model performance

5.5. Building a default prediction model

5.6. Financing a loan using reinforcement learning

Part VI: Building a Chatbot

6.1. Overview of a Chatbot

- Types of Chatbot Architecture
- Development Platforms
- Publishing Platforms
- Frameworks for building a Chatbot

6.2. Chatbot as a search engine

6.3. Knowledge Management using NLP and Graphs

Part VII: Real-world Considerations

7.1. Impact of AI on the banking profession, regulators, and government

7.2. IT Considerations concerning AI deployment