

Credit Risk and AI (Artificial Intelligence) Applications

Description

Credit Risk and Artificial Intelligence Applications course is a training program designed for professionals and students who want to learn the integration of credit risk management and artificial intelligence techniques. In this course, participants learn about artificial intelligence and machine learning techniques used in credit risk analysis and explore the practical applications of these techniques. The aim of this training is;

- To provide participants with basic knowledge in the field of credit risk management.
- To teach how artificial intelligence and machine learning techniques can be used in credit risk analysis.
- To enable participants to gain practical skills in assessing, modeling and managing credit risk.
- Discuss the advantages and potential challenges of AI technologies in credit risk management.

Audience

Banking sector professionals.

Data scientists and analysts.

Information technology and software development teams.

Managers looking for innovative solutions in banking.

Outline

Fundamentals of Artificial Intelligence

- What is Artificial Intelligence?
- What are the Application Areas of Artificial Intelligence? Real Life Examples.
- What are the Applications of Artificial Intelligence in the Financial Sector?
- The Future and Approaches of Artificial Intelligence.

Fundamentals of Data Science

- What is Data Analysis? What Can Be Done with Data Analysis?
- What is Data Science?
- What are the Elements of Data Science?
- How Do the Stages of Extracting Useful Information from Data Work? (Data Analytics)
- Application Examples of Data Analytics in the Financial Sector.

How Data Science is Applied in the Business Process Cycle

- CRISP-DM Methodology
- Basic Stages of Application Development in Data Science

Machine Learning

- What is Machine Learning? How Does Machine Learning Work?
- What are the Differences Between Machine Learning and Traditional Programming?
- What are the Types of Machine Learning?
- In Which Areas Do Machine Learning Algorithms Provide Solutions?
- The Future of Machine Learning
- Application Examples of Machine Learning in the Financial Sector.

Deep Learning

- What is Deep Learning? How Does Deep Learning Work?

- Differences Between Machine Learning and Deep Learning
- Application Examples of Deep Learning in the Financial Sector.

CRM Analytics

- What is CRM Analytics?
- What is RFM Analysis?
- What is the Relationship Between Machine Learning and CRM Analytics?

Developing Data Science (Artificial Intelligence) Applications - Exploratory Data Analysis

Developing Data Science Applications with Python

- Overview of the Python Programming Language
- Development Environments Used for Developing Programs with Python
- Basics of the Python Programming Language

Data Literacy

- Loading/Reading Data Sets from Files (Excel, CSV, etc.)
- Data Representation
- Understanding Data Dimensions
- Sampling in Data
- Data Types
- Basic Statistical Information

Data Preparation and Cleaning

- Understanding Data
- Viewing and Selecting Features
- Sorting and Grouping
- Operations on Features
- Operations on Observations
- Data Filtering
- Missing Data
- Duplicate Data
- Data Transformation Operations
- Detecting Outliers
- Data Visualization

Data Analysis on Financial Data Sets

- Financial Analysis on Credit Risk Data Set
- Analysis on Temporal Data Set (fetching and analyzing data from Yahoo Finance)

Developing Data Science (Artificial Intelligence) Applications - Machine Learning

Basic Concepts and Terminology

- Problem Types (Regression, Classification)
- Model
- Splitting the Data Set into Training and Test Sets
- Overfitting
- Model Validation

Types of Learning

- Supervised Learning
- Unsupervised Learning
- Reinforcement Learning

Feature Engineering

- Outlier Detection
- Data Cleaning
- Data Transformation (encoding, scaling)
- Data Reduction
- Feature Extraction

Methods for Evaluating the Success of Machine Learning Models

- Confusion Matrix
- R² Score
- F1 Score
- AUC-ROC Curve
- Mean Absolute Error (MAE)
- Mean Squared Error (MSE)

Scikit-Learn Module and Machine Learning

Machine Learning Algorithms/Models on Financial Data Sets and Application Development

Regression Models (Theory, Model, Prediction)

- Simple Linear
- Multiple Linear

Classification Models (Theory, Model, Prediction)

- Classification with Logistic Regression
- Classification with K-Nearest Neighbors (KNN)
- Classification with Decision Trees (CART)
- Classification with Support Vector Machines (SVM)

Clustering Models (Theory, Model, Prediction) (Unsupervised Learning Application)

- Clustering with K-Means Algorithm
- Hierarchical Clustering

Boosting Models (Theory, Model, Prediction)

- Gradient Boosting
- XGBoost
- LightGBM

RFM (Recency, Frequency, Monetary) Analysis within CRM Analytics

- Customer Segmentation with RFM Analysis
- Clustering with K-Means (K-Means Clustering)

Real-Time (Streaming Data) Machine Learning Application

- Developing a Prediction Application for an ML Model with Data Pulled from an Online Database (Firebase)

Saving and Transferring Machine Learning Models to Other Applications

- Methods for Using Data Science Models in Different Applications
- Model Transfer with Pickle
- Model Transfer with Joblib
- Converting to Native Code with m2cgen