

Oracle Machine Learning for Python on Oracle Cloud

Data Management

DURATION

2 Days

MODULES

7 Lectures

COURSE CODE

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Course Overview

This course is a deep dive into Oracle Machine technology which focuses on Oracle Machine Learning for Python. It shows how to use Machine learning algorithms and models, OML4Py datastores, and Automated Machine Learning.

What You Will Learn

Introduction to Machine Learning for Python

- Objectives
- Machine Learning: Introduction
- Introduction to Machine Learning
- Machine Learning: Process
- Machine Learning Process
- CRISP-DM Process
- Why Machine Learning?
- Machine Learning: Application Areas
- Use cases of Machine Learning
- Machine Learning: Use Cases
- Oracle Machine Learning: Use Cases
- Machine Learning: Workflow
- Simple Workflow for Machine Learning
- Machine Learning Algorithm: Types
- Types of Machine Learning Algorithms Supported in OML4Py
- Oracle Machine Learning for Python: Introduction
- Oracle Machine Learning for Python
- Oracle Machine Learning
- Oracle Machine Learning Notebooks
- Machine Learning for Python: Features
- Oracle Machine Learning for Python
- Machine Learning for Python: Advantages

- Advantages of Oracle Machine Learning for Python
- Oracle Machine Learning Notebooks
- Notebooks in Oracle Machine Learning
- Access Oracle Machine Learning Notebooks for Python
- Oracle Machine Learning Notebooks
- Python Libraries in OML4Py
- Python Libraries Included with OML4Py on ADB
- Summary

OML4Py Transparency Layer

- Objectives
- Transparency Layer: Overview
- Introduction to the OML4Py Transparency Layer
- Transparency Layer Data Table-Related Functions
- Transparency Layer Data Type Classes
- Python and SQL Data Type Equivalencies
- Push Local Python Data to the Database
- Push Local Python Data to the Database—Example
- Pull Data from the Database to a Local Python Session
- Create a Python Proxy Object for a Database Object
- Create a Persistent Database Table from a Python Data Set
- Transparency Layer Functions—Example
- Data Preparation
- Data Selection
- Data Selection by Column, Value—Example
- Combine Data
- Combine Two Objects
- Combine Two Objects—Example
- Clean Data
- Clean Data-Example
- Split Data
- Data Exploration
- Cross-Tabulate Data
- Cross-Tabulate Data—Example
- Mutate, Sort, and Summarize the Data
- Mutate, Sort, and Summarize Data
- Mutate the Data—Example
- Sort and Describe the Data—Example
- Summary

Working with Machine Learning Models

- Objectives
- Machine Learning Techniques and Algorithms
- OML4Py - In-Database Machine Learning Algorithms
- Machine Learning Classes and Algorithms

- Performance and scalability - model building
- Performance and scalability - data scoring
- Common in-database algorithm features
- Model settings
- Model Settings using GLM - Example
- Explanatory prediction details
- Partitioned model
- Structured data and unstructured text
- Automatic Data Preparation (ADP)
- Prediction (scoring)
- Attribute Importance
- Attribute Importance—Example
- Association Rules
- Association Rules—Example
- Association Rules - Example
- Decision Tree
- Decision Tree - Example
- Expectation Maximization
- Expectation Maximization - Example
- Explicit Semantic Analysis
- Explicit Semantic Analysis - Example
- Generalized Linear Model
- Generalized Linear Model - Example
- K-Means
- K-Means - Example
- Naive Bayes
- Naive Bayes - Example
- Neural Network
- Neural Network - Example
- Random Forest
- Random Forest - Example
- Singular Value Decomposition
- Singular Value Decomposition - Example
- Support Vector Machine
- Support Vector Machine - Example
- Create a Model Proxy Object from an Existing Model
- Create a Model from an Existing In-Database Model
- Export In-Database Models from Oracle Machine Learning for Python
- Export In-Database Models from OML4Py
- Export Oracle Machine Learning for Python Models
- Import a Model
- Import a Model - Example
- Summary

Data Store for Python Objects

- Objectives
- OML4Py Data Stores: Overview
- Introduction to OML4Py Data Store
- OML4Py Data Store
- OML4Py Interface for Data Store
- Save Objects to a Data Store
- Save Objects to a Data Store—Example
- Load Saved Objects from a Data Store
- Load Saved Objects from a Data Store—Example
- Get Information: Data Stores
- Get Information about Data Stores
- Get Information about Data Stores —Example
- Grant User Privileges on Data Stores
- Get Information: Data Store Objects
- Get Information about Data Store Objects
- Get Information about Data Store Objects—Example
- Delete Data Store Objects
- Delete Data Store Objects—Example
- Manage Access to Stored Objects
- Granting and Revoking Access to Data Stores —Example
- Summary

OML4Py Automated Machine Learning

- Objectives
- Oracle Automated Machine Learning: Overview
- Introduction to Oracle Automated Machine Learning
- Oracle Automated Machine Learning: Features
- OML AutoML Features
- Machine Learning Workflow: Automated by AutoML
- Automated Machine Learning (AutoML) Workflow
- Algorithm Selection
- Algorithm Selection—Example
- Feature Selection
- Feature Selection—Example
- Model Tuning
- Model Tuning—Example
- Model Selection
- Model Selection—Example
- Summary

Embedded Python Execution in OML4Py

- Objectives
- Embedded Python Execution: Introduction

- Introduction to Embedded Python Execution
- Embedded Python Execution
- Embedded Python Execution—Parallel Partitioned Data Flow Using Third-Party Package
- Run a Python Function
- Run a Python Function—Example
- Run a Python Function on the Specified Data
- Run a Python Function on Specified Data—Example
- Run a Python Function on Data: Grouped by Column Values
- Run a Python Function on Data—Grouped by Column Values
- Run a User-Defined Python Function on Sets of Rows
- Run a Python Function on Sets of Rows—Example
- Run a Python Function Multiple Times
- Run a Python Function Multiple Times—Example
- Script Repository: Overview
- Introduction to the OML4Py Script Repository
- Create and Store a Script
- Create and Store a Script—Example
- List Available Scripts
- List Available Scripts—Example
- Load and Drop Script from Repository
- Load and Drop a Script from Repository
- Load and Drop a Script from Repository—Example
- REST API : Introduction
- Introduction to REST API
- REST API -Workflow
- REST API Authentication—Example
- Create Data Frame and Load into DB
- Invoking the Function through REST API
- Creating and Invoking a user-defined Function through SQL API
- Summary

Working with cx_Oracle

- Objectives
- cx_Oracle: Overview
- Introduction to cx_Oracle
- cx_Oracle: Features
- Features of cx_Oracle
- cx_Oracle: Architecture
- cx_Oracle Architecture
- Oracle Database Connection - cx_Oracle
- Connect to Oracle Database
- Retrieving Data from Oracle Database
- Read/Write Table Methods
- Read and Write Table Methods—Example
- Invoking Functions and Stored Procedures
- Invoking Functions and Stored Procedures-cx_Oracle

- Invoking Functions and Stored Procedures—Example
- Calling a Stored Procedure with IN and OUT Parameters
- Summary