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Course Name

Data Preprocessing and Feature Engineering Masterclass (Structured & Unstructured Data)

Sector Name

Digital Transformation and Innovation

Document Type

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Data Preprocessing and Feature Engineering Masterclass (Structured & Unstructured Data)

Course Introduction

This program provides a comprehensive masterclass covering both structured and unstructured data, emphasizing preprocessing, feature engineering, and dimensionality reduction. It combines numerical, categorical, and text-based preprocessing in a single, hands-on program, preparing participants to handle complex datasets for analytics, dashboards, or AI initiatives.

The course focuses on practical, enterprise-ready techniques for cleaning, transforming, and optimizing data, ensuring that it is ready for machine learning, statistical modeling, or visualization.

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Target Audience

- ✓ Data Scientists and Aspiring Data Scientists
- ✓ Machine Learning Engineers
- ✓ Data Analysts and Business Analysts
- ✓ AI Engineers and MLOps Professionals

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Learning Objectives

- ✓ Handle preprocessing of mixed structured and unstructured datasets.
- ✓ Apply advanced feature selection and engineering methods.
- ✓ Use dimensionality reduction techniques to simplify high-dimensional data.
- ✓ Preprocess and vectorize text data for analytics and machine learning.
- ✓ Build end-to-end preprocessing pipelines for enterprise datasets.

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Course Outline

✓ DAY 01

Foundations of Data Preprocessing

- ✓ Cleaning structured and semi-structured data
- ✓ Handling missing values, outliers, and inconsistencies
- ✓ Encoding categorical data and scaling numeric features
- ✓ Introduction to text preprocessing

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Course Outline

✓ DAY 02

Feature Selection and Engineering Techniques

- ✓ Filter, wrapper, and embedded feature selection
- ✓ Creating interaction and derived features
- ✓ Handling multicollinearity and feature importance analysis
- ✓ Combining text and numeric features in predictive models

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Course Outline

✓ DAY 03

Dimensionality Reduction for Complex Data

- ✓ PCA, Truncated SVD, t-SNE, and UMAP
- ✓ Dimensionality reduction for sparse and dense matrices
- ✓ Reducing noise while preserving informative features
- ✓ Visualizing high-dimensional data after reduction

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Course Outline

✓ DAY 04

Advanced NLP and Text Feature Engineering

- ✓ Tokenization, stemming, lemmatization, and vectorization
- ✓ Word embeddings and semantic representation
- ✓ Reducing feature space for text analytics
- ✓ Text preprocessing for sentiment, classification, and clustering

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Course Outline

✓ DAY 05

Capstone: Integrated Data Pipeline

- ✓ Building end-to-end preprocessing pipelines
- ✓ Combining structured and unstructured data processing
- ✓ Feature engineering and dimensionality reduction for analytics
- ✓ Preparing clean, high-quality data for dashboards, ML, or analytics

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Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
April 4, 2027	April 8, 2027	5 days	4250.00 $	Qatar , Doha
May 2, 2027	May 6, 2027	5 days	4250.00 $	KSA , Riyadh
Sept. 13, 2027	Sept. 17, 2027	5 days	2150.00 $	Virtual , Online
Oct. 18, 2027	Oct. 22, 2027	5 days	4250.00 $	UAE , Dubai

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