KOENIG SOLUTIONS · COURSE OUTLINE

Unsupervised ML: Clustering, PCA & Anomaly Detection

Learn to apply clustering, dimensionality reduction and association rule mining to uncover patterns in unlabelled data.

3 Days	8	2
24 HOURS	TOPICS	HANDS-ON ACTIVITIES

COURSE OVERVIEW

Machine Learning (Unsupervised learning) certification validates an individual's skills in Algorithm designs that can autonomously analyze and derive meaningful insights from untagged, unlabeled datasets. It's all about understanding and implementation of Unsupervised learning techniques, such as Clustering and Dimensionality reduction algorithms that learn hidden structures from data for Predictive modelling. Industries use this certification to authenticate professionals' capabilities to handle large, complex datasets and convert them into intelligent informatics systems. This helps in diverse sectors like banking, healthcare, retail, and more, assisting in decision-making processes, predicting customer behaviour, identifying patterns and anomalies, which maximizes efficiency and profitability.

WHO THIS COURSE IS FOR

- **Data scientists seeking advanced knowledge**
- **AI enthusiasts interested in machine learning**
- **Technology professionals aiming to enhance their skills**
- **Graduates and postgraduates in computer science**
- **Mathematicians and statisticians looking to advance their computational skills**
- **Business analysts seeking to apply machine learning for data analysis**
- **Researchers and data analysts in academic and scientific fields**

LEARNING OBJECTIVES

- Apply hierarchical and K-Means clustering techniques
- Explain proximity measures used in clustering
- Implement DBSCAN for density-based clustering
- Identify the importance of dimensionality reduction
- Apply PCA, SVD and t-SNE for dimensionality reduction
- Implement association rule mining with FP-Growth
- Apply the Apriori algorithm in Python
- Develop recommender systems using a case study

COURSE SYLLABUS

8 Topics

TOPICS

- **Clustering Techniques:** Hierarchical Clustering, K-Means Clustering
- Proximity Measures in Machine Learning and DBSCAN (Density-Based Spatial Clustering of Applications with Noise)
- Anomaly Detection and Dimensionality Reduction – Importance of Dimensionality Reduction
- Principal Component Analysis (PCA), Singular Value Decomposition (SVD), and T-distributed Stochastic Neighbor Embedding (t-SNE)
- Association Rule Mining – FP-Growth Algorithm
- Apriori Algorithm Implementation in Python
- Recommender Systems
- Recommender Systems – Case Study 1

HANDS-ON

01 Clustering, Association Rule Mining

02 Dimensionality Reduction, Anomaly Detection

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

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