Unsupervised Learning & Metrics

About

This session covers unsupervised learning, focusing on clustering techniques, dimensionality reduction, and evaluation metrics. It explores applications in customer segmentation, anomaly detection, and recommendation systems. Students will implement clustering methods, analyze dimensionality reduction techniques, and build a simple recommendation system using unsupervised learning.

Content

Lesson	Est. Delivery Time	Skills
Setup	2 min	Set up the development environment.

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Introduction to Unsupervised Learning	10 min	Define unsupervised learning, its characteristics, and contextual relevance.
Clustering Techniques & Evaluation	30 min	Implement fundamental clustering techniques such as K-Means and DBSCAN, and evaluate results using silhouette scores.
Dimensionality Reduction (Methods + Metrics)	25 min	Implement dimensionality reduction techniques such as PCA and t-SNE and evaluate effectiveness using explained variance and reconstruction error.
Real-World Applications: Recommendation Systems	25 min	Build a simple recommendation system using clustering techniques and analyze its impact on personalization.
Total content	~ 90 min	