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FOR TRAINING

Advanced Data Analytics and Predictive Strategies with R for Data Science

IT & IT Engineering
Cape Town (South Africa)
13 - 17 Jan 2025

UK Traininig
PARTNER

Advanced Data Analytics and Predictive Strategies with R for Data Science

Ref: 3290_138064 **Date:** 13 - 17 Jan 2025 **Location:** Cape Town (South Africa) **Fees:** 3300 Euro

Introduction

This course focuses on advanced analytical techniques routinely used in industry and academic research. Advanced analytics is a tool that can help you get more out of your data. Predictive analytics can use these clean sets and existing insights to extrapolate and make predictions and projections about future activity, trends, and consumer behaviors.

Course Objectives of Advanced Data

- Estimation of basic models in R/Python.
- Approaches to dealing with missing data.
- Data reduction techniques.

Incorporating Advanced Data Analytics

By the end of the course, participants will gain proficiency in advanced data analytics, focusing on utilizing R for data science to facilitate prescriptive and predictive analytics. They will better understand data reduction strategies and the utilization of techniques such as item response theory and cluster analysis, which are essential for a comprehensive data analysis course.

Course Outlines of Advanced Data

Day 1: Principal Components Analysis and Data Reduction

- Rescaling principal components.
- Choosing the number of components.
- Component scores.

Data Reduction Techniques

Students will delve into Data Mining and Data Reduction, understanding how to apply Principal Components Analysis PCA effectively as a data reduction technique to identify the most relevant variables in large datasets.

Day 2: Factor Analysis and Item Response Theory

- Factor extraction and common factor analysis.
- Factor rotation and factor scores.

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Item Response Theory Models

- Latent trait models and item response function.
- Logistic and normal IRT models and interpreting the IRT score scale.

R for Data Science

Practical applications of R for data science will be demonstrated through factor analysis, which will provide participants with hands-on experience in advanced statistical modeling techniques like item response theory.

Day 3: Structural Equation Modeling

- Path diagrams.
- Structural equations & designing SEMs.
- Confirmatory factor analysis.
- Latent class models.

Structural Equation Modeling

We will explore structural equation modeling, an advanced form of prescriptive analytics used to understand and quantify relationship between variables and test complex theoretical models.

Day 4: Cluster Analysis and Association Rules

- Classification in social sciences.
- Hierarchical clustering k-means clustering.
- Model-based clustering.
- Visualization of clustering results.

Cluster Analysis

Participants will gain knowledge in cluster analysis, which will enable them to segment datasets into meaningful groups and apply association rules that provide insight into patterns and relationships within the data.

Day 5: Missing Data Techniques

- Missing data generation and mechanisms.
- Multiple imputations.
- Pattern mixture models.
- Data missing not at random.
- Missing data in longitudinal studies.

Prescriptive Analytics

We will cover prescriptive analytics techniques for dealing with missing data, including multiple

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imputation methods and pattern mixture models, which are critical for making informed decisions in real-world data analysis.

Conclusion

Throughout this course, participants will intensively study advanced data analytics topics, ensuring they are equipped with the necessary skills and techniques to excel as data analysts and harness the power of data for decision-making.

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