



Advanced Data Analytics

The Advanced Data Analytics workshop builds on the theory and concepts presented in the Introduction to Data Analytics. Start your session with a guided journey of how segmentation systems work, how they are constructed and how they benefit businesses. Continue by learning how the fundamentals of 'k means clustering' works, and follow the path of analysis that has already been computed to see how this machine learning technique is used in business.

Participants will walk away with knowledge of the capabilities and underlying mechanics of popular machine learning algorithms that can be used to solve a variety of real business problems. Participants will also discuss the limitations and assumptions behind the models, to help guide the appropriate selection of algorithms and tools.

Course Topics

- Segmentation systems
- Fundamentals of Time Series
- Unsupervised learning using 'k means clustering' and 'hierarchical clustering'
- Supervised learning and Modeling using:
 - Linear Regression in Excel
 - Logistic Regression in R-studio
 - Support Vector Machines in R-studio
 - Gradient Boosted Machines in R-studio
- As time permits, Random Forest and Hierarchical Clustering in R-studio

Learning Objectives

- Explore segmentation systems, how they are constructed and potential business applications
- Build your understanding of how time series and forecasting works and how it can benefit your organization
- Apply 'hierarchical clustering' as an introduction to unsupervised learning
- Gain an understanding of how unsupervised learning techniques like 'k means clustering' can help solve business problems
- Engage in supervised learning through linear and logistic regression, decision trees and support vector machines, and if time permits, ensemble methods such as gradient boosted trees and random forests

Related Courses

- Introduction to Data Analytics (required prerequisite)
- Introduction to Data Visualization

 UTSA Main Campus, San Antonio

 8 hours

Instructor



Arkajyoti (Arka) Roy, Ph.D. (UTSA)

Roy's research focuses on developing decision-making models in the presence of uncertainties. Application areas include cancer radiotherapy and marketing. Ongoing work in marketing includes estimating customer worth under competing risks and optimal resource allocation for marketing campaigns. Roy has won various teaching and research awards including the 2018 Best Paper Award in the ISE Transactions on Healthcare Systems Engineering journal managed by the Institute of Industrial Engineers. In addition to his teaching and research endeavors, Roy is an active member of the Institute for Operations Research and the Management Sciences (INFORMS) and the American Association of Physicists in Medicine (AAPM).