uCertify

Analytics, Data Science, & Artificial Intelligence: Systems for Decision Support

Lesson Practice test Lab

24 Mar 2023

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15 Implementation Issues: From Ethics and Privacy to Organizational and Societal Impacts

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Know the various types of data analytics with examples, products, services, and exercises by means of introducing artificial intelligence, machine learning, robotics, chatbots, Internet of Things, and Web/Internet-related enablers with uCertify's course Analytics, Data Science, & Artificial Intelligence: Systems for Decision Support.

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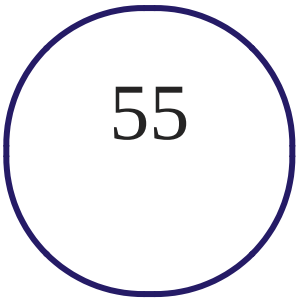

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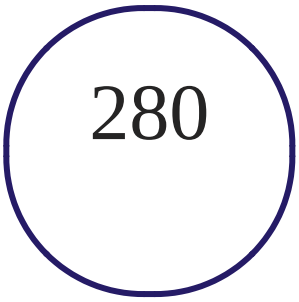

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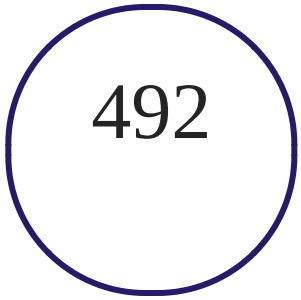

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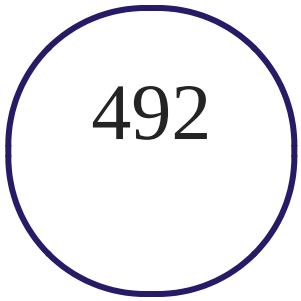

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1: Preface

- What’s New in the Eleventh Edition?
- Plan of the Course
- Resources, Links, and the Teradata University Network Connection

2: Overview of Business Intelligence, Analytics, Da...icial Intelligence: Systems for Decision Support

- Opening Vignette: How Intelligent Systems Work for KONE Elevators and Escalators Company
- Changing Business Environments and Evolving Needs for Decision Support and Analytics
- Decision-Making Processes and Computerized Decision Support Framework
- Evolution of Computerized Decision Support to Business Intelligence/Analytics/Data Science
- Analytics Overview
- Analytics Examples in Selected Domains
- Artificial Intelligence Overview
- Convergence of Analytics and AI
- Overview of the Analytics Ecosystem
- Lesson Highlights
- Questions for Discussion
- Exercises
- References

3: Artificial Intelligence Concepts, Drivers, Major Technologies, and Business Applications

- Opening Vignette: INRIX Solves Transportation Problems
- Introduction to Artificial Intelligence
- Human and Computer Intelligence
- Major AI Technologies and Some Derivatives
- AI Support for Decision Making
- AI Applications in Accounting
- AI Applications in Financial Services
- AI in Human Resource Management (HRM)
- AI in Marketing, Advertising, and CRM
- AI Applications in Production-Operation Management (POM)
- Lesson Highlights
- Questions for Discussion
- Exercises
- References

4: Nature of Data, Statistical Modeling, and Visualization

- Opening Vignette: SiriusXM Attracts and Engages ...on of Radio Consumers with Data-

Driven Marketing

- Nature of Data
- Simple Taxonomy of Data
- Art and Science of Data Preprocessing
- Statistical Modeling for Business Analytics
- Regression Modeling for Inferential Statistics
- Business Reporting
- Data Visualization
- Different Types of Charts and Graphs
- Emergence of Visual Analytics
- Information Dashboards
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- Questions for Discussion
- Exercises
- References

5: Data Mining Process, Methods, and Algorithms

- Opening Vignette: Miami-Dade Police Department I... Predictive Analytics to Foresee and

Fight Crime

- Data Mining Concepts
- Data Mining Applications
- Data Mining Process
- Data Mining Methods
- Data Mining Software Tools
- Data Mining Privacy Issues, Myths, and Blunders
- Lesson Highlights
- Questions for Discussion
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6: Machine-Learning Techniques for Predictive Analytics

- Opening Vignette: Predictive Modeling Helps Better Understand and Manage Complex Medical Procedures
- Basic Concepts of Neural Networks
- Neural Network Architectures
- Support Vector Machines

- Process-Based Approach to the Use of SVM
- Nearest Neighbor Method for Prediction
- Naïve Bayes Method for Classification
- Bayesian Networks
- Ensemble Modeling
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7: Deep Learning and Cognitive Computing

- Opening Vignette: Fighting Fraud with Deep Learning and Artificial Intelligence
- Introduction to Deep Learning
- Basics of “Shallow” Neural Networks
- Process of Developing Neural Network–Based Systems
- Illuminating the Black Box of ANN
- Deep Neural Networks
- Convolutional Neural Networks

- Recurrent Networks and Long Short-Term Memory Networks
- Computer Frameworks for Implementation of Deep Learning
- Cognitive Computing
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- Questions for Discussion
- Exercises
- References

8: Text Mining, Sentiment Analysis, and Social Analytics

- Opening Vignette: Amadori Group Converts Consumer Sentiments into Near-Real-Time Sales
- Text Analytics and Text Mining Overview
- Natural Language Processing (NLP)
- Text Mining Applications
- Text Mining Process
- Sentiment Analysis
- Web Mining Overview
- Search Engines

- Web Usage Mining (Web Analytics)
- Social Analytics
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9: Prescriptive Analytics: Optimization and Simulation

- Opening Vignette: School District of Philadelphi...ptimal Solution for Awarding Bus Route Contracts
- Model-Based Decision Making
- Structure of Mathematical Models for Decision Support
- Certainty, Uncertainty, and Risk
- Decision Modeling with Spreadsheets
- Mathematical Programming Optimization
- Multiple Goals, Sensitivity Analysis, What-If Analysis, and Goal Seeking
- Decision Analysis with Decision Tables and Decision Trees
- Introduction to Simulation

- Visual Interactive Simulation
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10: Big Data, Cloud Computing, and Location Analytics: Concepts and Tools

- Opening Vignette: Analyzing Customer Churn in a Telecom Company Using Big Data Methods
- Definition of Big Data
- Fundamentals of Big Data Analytics
- Big Data Technologies
- Big Data and Data Warehousing
- In-Memory Analytics and Apache SparkTM
- Big Data and Stream Analytics
- Big Data Vendors and Platforms
- Cloud Computing and Business Analytics
- Location-Based Analytics for Organizations

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11: Robotics: Industrial and Consumer Applications

- Opening Vignette: Robots Provide Emotional Support to Patients and Children
- Overview of Robotics
- History of Robotics
- Illustrative Applications of Robotics
- Components of Robots
- Various Categories of Robots
- Autonomous Cars: Robots in Motion
- Impact of Robots on Current and Future Jobs
- Legal implications of Robots and Artificial Intelligence
- Lesson Highlights
- Questions for Discussion

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- References

12: Group Decision Making, Collaborative Systems, and AI Support

- Expert Systems and Recommenders
- Concepts, Drivers, and Benefits of Chatbots
- Enterprise Chatbots
- Virtual Personal Assistants
- Chatbots as Professional Advisors (Robo Advisors)
- Implementation Issues
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- Questions for Discussion
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14: The Internet of Things as a Platform for Intelligent Applications

- Opening Vignette: CNH Industrial Uses the Internet of Things to Excel
- Essentials of IoT
- Major Benefits and Drivers of IoT
- How IoT Works
- Sensors and Their Role in IoT

- Potential Dangers of Robots, AI, and Analytical Modeling
- Relevant Technology Trends
- Future of Intelligent Systems
- Lesson Highlights
- Questions for Discussion
- Exercises
- References

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PRE-ASSESSMENTS QUESTIONS	**POST-ASSESSMENTS QUESTIONS**

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- Identifying Types of Decision
- Identifying Phases Involved in Decision Making
- Understanding Business Intelligence
- Identifying Enablers that belong to the Type of Business Analytics
- Understanding Artificial Intelligence
- Understanding AI Technologies
- Identifying Steps Involved in Data Preprocessing
- Understanding the Different Charts and Graphs
- Learning Data Mining Patterns
- Identifying Tasks Involved in Data Mining Methods
- Learning Data Mining Algorithms, Processes, and Methods
- Understanding Predictive Modeling
- Identifying Activities Involved in an SVM Model
- Understanding AI and its Advancements
- Identifying Technologies Involved in Cognitive Computing and AI
- Understanding Text Mining
- Understanding Natural Language Processing
- Understanding Simulation
- Understanding Visual Interaction Simulation
- Understanding big data
- Understanding big data and Cloud Computing
- Understanding Robotics and AI
- Understanding the Applications of Robotics
- Identifying the Software Tools
- Understanding Group Decision Making
- Understanding Chatbot
- Understanding Sensor
- Understanding Smart Home
- Understanding the Implementation of Intelligent System

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PERFORMANCE BASED LAB

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support@ucertify.com