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EDUCATIONS

Advanced Analytics for Industry 4.0

Details:

- 4 Sessions
- 10 Modules
- 16 Hours

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PROGRAM OVERVIEW

The 4th Industrial Revolution is the 21st century convergence of digital, physical and bio technologies driving an unrelenting acceleration of human progress. Advances in computing power, artificial intelligence, IoT and machine learning are enabling companies to speed the pace of growth and create amazing experiences in retail, healthcare, smart cities and other vertical industries. The technology of the Fourth Industrial Revolution is inseparably tied to the vast amounts of data needed to train artificial intelligence and other key forms of modern technology. The need for data has led to exponential growth in gathering it and advanced analytics has gained massive momentum in the industrial sector. Its evolution and conquest of the markets is unstoppable, along with its presence and importance as an essential tool. The main objectives of this program are presenting the scientific concepts and providing industrial case studies for different applications of advanced analytics, which can be grouped into three main areas:

- **Descriptive Analytics:** Its function is to describe, diagnose, and discover what trends and patterns occur in a given process, thanks to the real-time study of historical data.

- **Predictive Analytics:** Based on more advanced mathematical methods that include statistical analyses, data mining, predictive models, and machine learning, among others. Its function consists of predicting events that can occur in the future, thanks to developing a predictive model.

- **Prescriptive analytics:** Its function consists of defining the actions to take to obtain the best results in a process. It relies on predictive models, scenario simulations, localized rules, and technical optimization to transform data and recommends taking to obtain the desired result. This level of analytics is completer and more robust. It uses complex event processing, neural networks, heuristic learning, and "machine learning," among others.

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KEY BENEFITS

The Program is aimed at providing:

- Identify where and how to apply advanced data analytics to improve energy efficiency, productivity, and reduce operations' maintenance costs;
- Industry executives with an understanding of the business value and applicability of different analytic approaches;
- Data analytics leads with a business framework in which to assess the value, cost, and risk of potential analytic solutions as well

WHO SHOULD ATTEND THIS PROGRAM?

This course is designed for all C-level / President / Vice President / Director / Head / Manager of:

- Change Management
- Technology Transformation
- Business Management
- Organization Development
- Organization Transformation
- Marketing Management
- Project Management
- Business Strategy
- Business Transformation
- Brand

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Agenda

SESSION 1: DIGITAL TRANSFORMATION AND INDUSTRY 4.0

Module 1: Industry 4.0

- Phases of Industries
- Foundations
- Technology Developments
- Talent Developments
- Business Developments
- System Integration
- Supply Chain
- Implementation of Industry 4.0
- Prime Challenges
- Challenges And Goals

Module 2: Artificial Intelligence

- Artificial Intelligence Definition
- Artificial Intelligence Types
- Artificial Intelligence Categories
- Artificial Intelligence Applications
- Artificial Intelligence's Impact on Industry 4.0

SESSION 2: Advanced Analytics and Data

Module 3: Advanced Analytics categories

- Advanced Analytics Importance & benefits
- Advanced Analytics Categories
- Descriptive analytics
- Predictive analytics
- Prescriptive analytics
- Optimization
- Advanced Analytics Categories Differences
- Advanced Analytics & AI Maturity Framework

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Module 4: Data

- Types of Data Levels
- Data Sources
- Data Types
- Big Data
- Data Mining
- Crisp DM
- Waterfall & Agile CRISP-DM
- How Much Data Do You Need?
- More Data Terms and Concepts

SESSION 3: MACHINE LEARNING

Module 5: Supervised and Unsupervised Machine Learning

- What Is Machine Learning?
- What Can You Do with Machine Learning?
- The Machine Learning Process
- Applying Algorithms
- Supervised Learning
- Naïve Bayes Classifier
- K-Nearest Neighbor
- Regression
- Decision Tree
- Random Forest
- Ensemble Modeling
- Unsupervised Learning
- Clustering
- Association
- Anomaly Detection
- K-means clustering

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Module 6: Reinforcement and Semi-supervised Machine Learning

- Reinforcement Learning
- Policy optimization or policy-iteration methods
- Q-learning or value-iteration methods
- Hybrid methods
- Semi-supervised Learning
- Generative models
- Low-density separation
- Laplacian regularization
- Heuristic approaches

SESSION 4: DEEP LEARNING AND OPTIMIZATIONS METHODS

Module 7: Deep Learning

- What Is Deep Learning?
- Difference Between Deep Learning and Machine Learning
- Deep Learning Use Cases
- Deep Learning Hardware
- When to Use Deep Learning?

Module 8: Optimization Algorithms

- Ant colony optimization algorithms (ACO)
- Genetic Algorithm
- Artificial Neural Networks (ANNs)
- Feedforward Neural Network
- Multi-Layer Perceptron Neural Network
- Radial Basis Function Neural Network
- Recurrent Neural Network
- Short-Term Neural Network
- Recurrent Neural Network
- Convolutional Neural Network (CNN)
- Generative Adversarial Networks (GANs)

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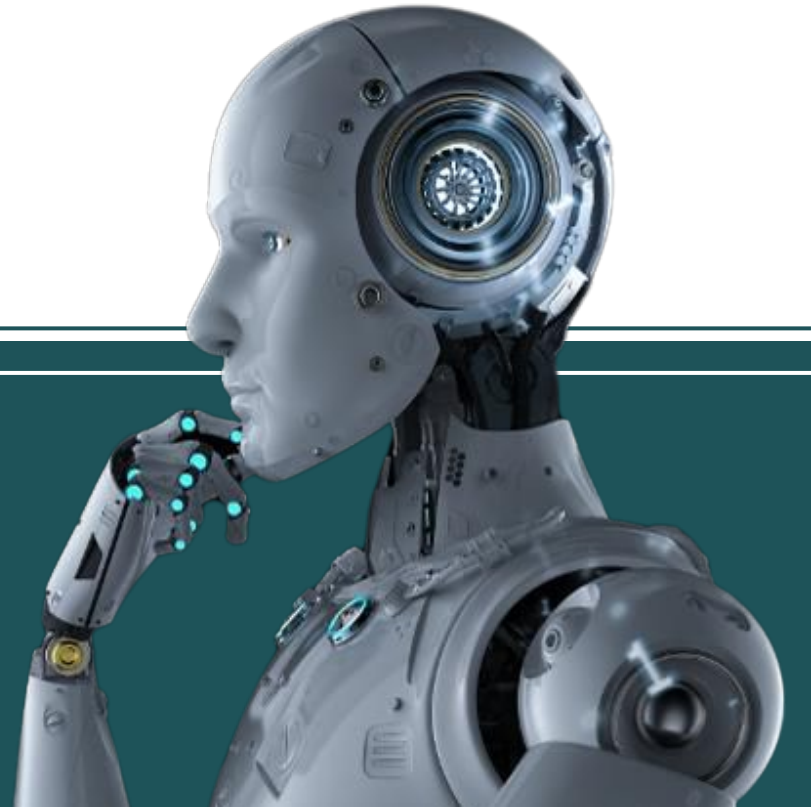
SESSION 5: FUTURE AND CASE STUDIES

Module 9: Opportunities & Challenges

- Future of Industrial Revolution
- Industrial Revolution Governmental Programs
- Ethical Considerations
- Technological Unemployment
- AI Impact in Industry 4.0
- Dark & Bright side of AI
- Artificial General Intelligence (AGI) Requirements
- AGI Dangerous
- Are We Ready for AGI?

Module 10: Case Studies

- Topic 1: Application of AI to increase the energy efficiency in surface mining (Case Study 1)
- Topic 2: Application of AI to decrease the mine mobile equipment maintenance cost (Case Study 2)
- Topic 3: Application of AI to estimate the shipping cost (Case Study 3)
- Topic 4: Application of AI to predict and minimize the locomotive fuel consumption (Case Study 4)



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Soofastaei-Educations is an influential global training organization that delivers specialized world-class short- and long-term educational programs.

This organization is a part of Soofastaei Institute, which provides technical business solutions, publications, and educational services in the field of advanced applied analytics and AI in different for different industries.

The Soofastaei Educations works directly with the prestigious universities and giant industrial companies to train the new generation of students and experts for the digitalized future industries.

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