AI & Machine Learning
Today's Implementation Realities
Course Outline

SESSION I – WHAT IS AI, MACHINE LEARNING AND DATA SCIENCE?

- What is the Organizational Value of AI & Machine Learning?
  - Two High-Value Use Cases
  - Deriving Value
  - Analytic Stages and ROI
  - The Relationship Between Analytics, Machine Learning, AI & Data Science
  - Top Three Sources of High ROI
- How is Data Science Different from AI?
  - A Short History of Analytics
  - Three Types of Analytics
    - Descriptive Analytics
    - Predictive Analytics
    - Discovery
  - Machine Learning & Analytic Methods, the Same but Different
    - Statistics
    - Data Mining
    - Machine Learning
  - Comparison and Cautions of Machine Learning Analytics vs. Regular Analytics
- What are the Skills Needed for Machine Learning?
- What Does a Data Scientist Do All Day?
  - Data Scientist Fundamental Skills
  - Characteristics of Data Scientists

SESSION II – DATA SCIENCE CORE CONCEPTS

- Orientation to Big Data
  - The Official Definition
  - The Unofficial Definition
  - Some Executives' Definitions
  - The "Real" Definition
  - A Strategic Definition
  - My Working Definition
- Trends within the analytically competitive organization
- The advent of Data Science
  - The Arena: From business unit-based to IT department-based
  - The Professionals: From analyst to data scientist

    - The Analyses: From descriptive analyses / business intelligence to predictive analyses / data mining / machine learning
- What is machine learning' role in Big Data?
    - Big data needs advanced analytics …but does analytics need big data?
    - You will never have a perfect model
    - Market perceptions of big data
- ROI of data science, big data and associated analytics
    - Retail use case
    - Guerrilla marketing use case
    - Medical or government use case
- The future of data science, big data and advanced analytics

SESSION III – HOW TO THINK LIKE A DATA SCIENTIST

- Stats 101 in ten minutes
- A / B testing and experiments
- BI vs predictive analytics
- IT's role in predictive analytics
- Statistics and machine learning: complementary or competitive?
- Primary project types
    - Predicting a value given specific conditions
    - Identifying a category given specific conditions
    - Predicting the next step in a sequence
    - Identifying groups

SESSION IV – HOW TO THINK LIKE A DATA SCIENTIST (continued)

- Common analytic and machine learning algorithms
    - Regression
    - Decision Trees
    - Neural Networks
    - Genetic Algorithms
    - Ensemble Modeling
- Popular tools to manage large-scale analytics complexity
    - R and Python
    - Hadoop, MapReduce and Spark
    - Data Mining "workbenches"

SESSION V – HOW TO THINK LIKE A DATA SCIENTIST (continued)

- Performing a data reconnaissance
- Building the analytic sandbox
- Preparing train / test / validation data

- Defining data sufficiency and scope

SESSION VI – THE CAO's ROADMAP

- The Modeling Practice Framework™
- The elements of an organizational analytics assessment
- Project Definition: The blueprint for prescriptive analytics
- The critical combination: predictive insights & strategy
- Establishing a supportive culture for goal-driven analytics
- Defining performance metrics to evaluate the decision process
- What is the behavior that impacts performance?
- Do resources support stated objectives?
- Leverage what you already have
- Developing and approving the Modeling Plan

SESSION VII – THE CAO's ROADMAP (continued)

- Selecting the most strategic option
- Planning for deployment
  - What will the operational environment be?
  - Who or what is the end consumer?
  - How do results need to be purposed or presented?
- Measuring finalist models against established benchmarks
- Preparing a final Rollout Plan
- Monitoring model performance for residual benefit

SESSION VIII – BUILDING THE GOAL-CENTERED ANALYTICS OPERATION

- Attracting and hiring the right analytic talent
- The roles and functions of the fully-formed analytic project team
- Specialization in analytic project teams
- Analytic opportunity identification, qualification and prioritization
- Organizational resistance and developing a culture for change
- Project failure is not the worst outcome
- Staging the organizational mind shift to data-driven decisioning
- Motivating adoption by domain experts, end users and leadership
- Recording ongoing organizational changes
- Monitoring and advancing organizational analytic performance
- "Democratizing" analytics: Advantages and risks of "self-service"
  - Tableau
  - Watson Analytics
  - Establishing performance dashboards

SESSION IX – BUILDING THE GOAL-CENTERED ANALYTICS OPERATION (continued)

- Standing up an agile analytic modeling factory
- Knowledge retention and skill reinforcement
- The Future of AI and Advanced Analytics
- From Rhetoric to Reality
- Biggest Driver of AI and Machine Learning Innovation
  - Continually Improving Productivity and Profitability
  - Predicting Problems Before They Happen Becomes the New Norm
  - Changing Ever More Operational Models
- What's Next in Data Science, AI and Machine Learning?
- Defining Your Organization's AI Reality

RESOURCES

- Analytic Glossary
- Recommended Books
- LinkedIn Groups
- Data Repositories
- Predictive Analytics Across Social Media
- Webinars, Courses, Conferences