



Defining the Pieces of the Data Puzzle

MACHINE LEARNING

MACHINE LEARNING (ML) involves training computers, through repeated presentation of observations and outcomes, to make predictions that are not obvious to a person.

- Expertise modeling techniques/tools
- Understanding the statistical basis of algorithms
- Programming (Python or other ML language)
- Work closely with data scientists to ensure machine learning technology delivers results for the organization

RELEVANT JOB TITLES

Data Scientist
Machine Learning Engineer
AI Engineer
Machine Learning Researcher
Machine Learning Developer
Data Engineer

COURSES THAT ADDRESS TOPIC AREA

8

INSTRUCTORS QUALIFIED IN TOPIC AREA

7

DATA ANALYTICS

DATA ANALYTICS is the most common use of data, involving extracting data from relational databases (e.g., SQL Server, Oracle) and presenting findings as reports and corporate dashboards.

- Manipulate databases using SQL
- Use dashboard tools and design effective dashboards
- Utilize statistical tools to maintain data integrity
- Produce effective, clear charts that inform, rather than confuse, decision makers

Business Analyst
Data Analyst
Data Scientist
Data Engineer
Quantitative Analyst
Project Manager

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BIG DATA describes working with data that is too large to be processed using standard (e.g., workstation, single server) tools. Popular platforms include Hadoop, Spark, and Tableau.

- Operate and manage clusters of networked computers
- Maintain high availability of the cluster
- Understand how cyber security issues can affect big data
- Programming using enterprise languages, such as Java and Scala

Data Scientist
Data Engineer
Data Analyst
Security Engineer
Database Manager
Data Architect

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DECISION ANALYSIS is the process of applying a standardized and tested methodology for decision-making which helps organization make decisions more easily and transparently.

- Formalize the decision-making process
- Frame decisions, think creatively, analyze, and implement informed and justifiable decisions
- Understand uncertainty with data
- Use multi-criteria alternatives
- Leverage skills/tools like emotional intelligence, management techniques, decision trees, diagrams, and more

Relevant to anyone responsible for decision-making in an organization.

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DATA VISUALIZATION involves representing information visually (e.g., charts, tables, diagrams, illustrations) in order to bring data to life in a way that's easy to understand to drive better business decisions.

- Expertise modeling techniques/tools
- Understanding the statistical basis of algorithms
- Programming (Python or other ML language)
- Work closely with data scientists to ensure machine learning technology delivers results for the organization

Data Analyst
Database Architect
Data Visualization Engineer
Data Visualization Scientist
Data Engineer

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ARTIFICIAL INTELLIGENCE (AI) has been around since the 1950s, but today's AI researchers use cutting-edge tech like deep learning (aka, neural networks), Natural Language Processing (NLP), and image processing (used in self-driving cars).

- Highly specialized by area of research and niche expertise
- Programming and writing code for machines
- Designing and developing machines and systems that can learn and apply knowledge without specific direction.
- Research, analytical, organizational, and critical thinking skills

Machine Learning Engineer
Data Scientist
Business Intelligence Developer
Research Scientist
Big Data Engineer/Architect
Software Engineer

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