


SKILLS NEEDED
RELEVANT JOB TITLES
COURSES THAT ADDRESS TOPIC AREA
INSTRUCTORS QUALIFIED IN TOPIC AREA

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

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

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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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