Data Science

Data Science is a scientific approach to data analysis.

Data Scientists organize and analyze data to extract knowledge from it, to gain new insights for problem solving and decision making. Data science incorporates skills from many disciplines such as computer science, mathematics, and statistics, which results in a unique skill set desirable for many commercial and government jobs. This has resulted in incredibly strong demand, salaries, and job security for those with these skills.

John Wilder Tukey, born New Bedford, MA. Professor of Mathematics, Princeton University:

"*I have come to feel that my central interest is in data analysis, which I take to include, among other things: procedures for analyzing data, techniques for interpreting the results of such procedures, ways of planning the gathering of data to make its analysis easier, more precise or more accurate, and all the machinery and results of (mathematical) statistics which apply to analyzing data.*"

BS in Data Science

The Data Science program at the University of Massachusetts Dartmouth is an interdisciplinary program focused on harnessing the potential power of big data to transform areas ranging from healthcare to business to government. The data science program integrates traditional disciplines such as mathematics, statistics, and computer science.

Courses include introduction to data science, exploratory statistics, data visualization, object-oriented programming, algorithms and data structures, probability, statistics, matrix methods for data analysis, database design, and machine learning.

Data Science careers

Examples of companies employing Data Scientists include:
- Facebook   Twitter   LinkedIn   Google
- Wal-Mart   Nordstrom   Gap   Neiman Marcus
- Capital One   American Express   MasterCard
- AllState   Hartford   State Farm AIG
- Airbnb   Uber
- Microsoft   Apple   IBM   Yahoo
- eBay   Amazon   Trulia   Netflix
- Department of Defense   Boston Consulting Group
- AT&T   Nokia   Sprint

See **http://bit.ly/1tl5Ygw** for 7500 + companies employing Data Scientists.

What do data scientists earn?

The national average Data Scientist salary in 2015 is approximately $119,000, according to *GlassDoor*, with salaries typically ranging from $85,000 through $165,000. Salaries depend on qualifications and experience. A Data Scientist is a relatively senior position and many Data Scientists start out as data analysts. A graduate degree such as an M.S. or a Ph.D. increases chances of employment at higher salaries.

What skills do data scientists need?

Skills most in demand currently include:
- Statistics, including linear & nonlinear regression
- Linear algebra, matrix analysis
- Use of data analysis software: R, SAS, Stata
- Programing skills: R, Python, Java
- Data base skills: SQL, NoSQL, graph databases
- Devising computer algorithms
- Data visualization
- Software for Big Data: Hadoop, Map Reduce
- Ability to communicate to non-technical teams

"*Understanding correlation, multivariate regression and all aspects of massaging data together to look at it from different angles for use in predictive and prescriptive modeling is the backbone knowledge that's really step one of revealing intelligence....*"

UMass | Dartmouth

Data Science

http://www.umassd.edu/interdisciplinary/datascience
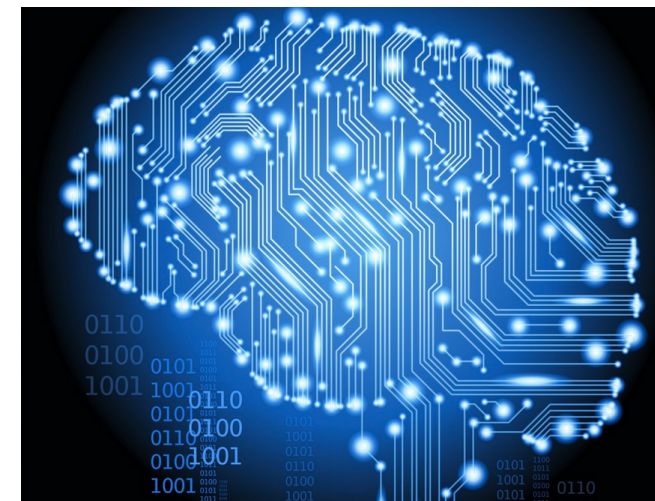
Prominent Data Scientists

Hilary Mason

Founder at Fast Forward Labs. Formerly Chief Data Scientist at bitly.com

DJ Patil

U.S. Chief Data Scientist White House Office of Science & Technology Policy

Sara Will

Lead Data Analyst at Apple

Qiuyan Xu

Chief Data Scientist First Realty Management, Boston

Ned McCague

Data Scientist Kyruus (kyruus.com) Boston

Masters program

The MS in Data Science is a flexible 2 year program designed to educate and train students to work as data scientists in business, commerce & industry (including areas such as public health). The MS has 5 required courses in statistics, database design, computational methods including high performance computing, data visualization, and a practicum in which students focus on a real world problem. Other courses are electives, chosen by students in conjunction with their academic adviser. These elective courses are intended to give students in-depth knowledge and experience in application fields of data science, such as business, science, finance or health. Additionally students can take relevant advanced level courses in computer science and in mathematics, including statistics.

Undergraduate research

Students have many opportunities to work with academic faculty on applied research projects in data analysis and data science. Massachusetts has a large number of data-driven businesses, and opportunities to work on real-world projects are plentiful. An example is student research on exploratory analysis of data on substance abuse data on Cape Cod.

Business

Data Scientists are invaluable in business and commerce. They perform useful analytics on various company data, ranging from product transactions to customer interactions with advertisements.

Science

Scientists, including physicists, biologists, & chemists, utilize data science to analyze large amounts of data from experiments - in molecular biology for example - or naturalistically - in astronomy, for example.

Health

Analysis of large amounts of patient data, much of it gathered electronically, plays a big role in measuring the effectiveness of drug treatment and patient health, and in reducing health costs.

E-commerce

E-commerce websites have opened up a new opportunity for data scientists. Online e-commerce platforms aggregate data, ranging from a customer's interaction with the website to the sales of particular products.

Finance

The financial sector benefits greatly from data scientists. Data analysis ranges from personal banking, from savings to checking accounts, to investment portfolios.

Government

The Federal government has recently made a push to incorporate big data, from appointing the first Chief Data Scientist in 2015, to opening their data.gov website