DATA SCIENCE CAREER GUIDE

A Comprehensive Playbook to Becoming a Data Scientist

BECOME PART OF THE UPRISING DATA SCIENCE

Over the last few years, technology has evolved at a rapid pace, enabling faster changes and processes. And organizations are opening up their doors to data science and unlocking its power, which increases the value of a data science professional who knows how to harness actionable insights out of petabytes of data.

Since data is the omnipresent force ruling our lives now, and will be for the foreseeable future, jobs in this domain are booming like never before. Professionals ahead of the curve will find it easy to keep pace with emerging jobs. 2020 is an exciting time for professionals to stay current with tech trends and acquire new-age tech skills.

Institute i4's 2020 Data Science Playbook is your complete guide to the skills required, career opportunities available and the ideal learning path needed to propel a career in the thriving and lucrative field of machine learning. Our Playbook also provides the most trending technologies, the top companies that are hiring, and ways to jumpstart your career.

Read this Data Science Playbook for a personalized roadmap to a successful career, and take a sneak peek into the world that awaits you

MARKET STUDY FOR DATA SCIENCE ENTHUSIASTS

What's Next for Data Science

Data Science has taken the world by storm. Everything in today's cloud-based business world moves fast, producing and compiling data at a rapid rate. The possibilities (and potential pitfalls) of managing and utilizing data operations are endless with new applications of Data Science being discovered every day—creating jobs across sectors and giving rise to new career paths.

The Expanding Field of Data Science

Organizations are using Data Science to enhance their products, business decisions, and marketing effectiveness. There has been a 29 percent increase in demand for data scientists year over year and a dramatic upswing of 344% increase since 2013. Opportunities in the field are limitless, and job roles in Data Science promise plenty of possibilities and high-paying salaries.

Data Science in Different Sectors

The field of Data Science and related technologies are drastically changing the way business is done across all industry sectors. These edge technologies are gradually bringing about transformational changes, and faster processes across sectors.

Banking

Healthcare

Retail

Education

Government

Manufacturing

Entertainment

Transportation

DATA DATA EVERYWHERE

Every time you send a text message, type a tweet, post a Facebook photo, click a link , or buy something online, you're generating data. And considering there are more than 3.5 billion Internet users in the world and 2 billion cellphone users, that's a heck of a lot of data.

Fortunately, as data has multiplied, so has the ability to collect, organize, and analyze it. Data storage is cheaper than ever, processing power is more massive than ever, and tools are more accessible than ever to mine the zettabytes of available data for business intelligence. In recent years, data analysis has done everything from predict stock prices to prevent house fires.

All that data crunching requires an army of data masters. Translation: there's never been a better time to pursue a career in data. Back in 2011, the McKinsey Global Institute predicted in that by 2018 the U.S. could face a shortage of 1.5 million people who know how to leverage data analysis to make effective decisions—we're already on track to exceed that number. In a recent data science report from CrowdFlower , a staggering "83% of data scientists polled feel that there is shortage of data scientists today."

Enter: You.

HOTTEST OPPORTUNITIES IN DATA SCIENCE
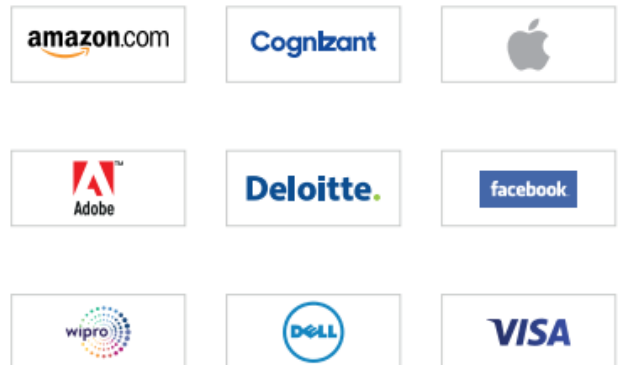
Data Scientist

The Harvard Business Review acclaimed the job of a Data Scientist to be the 'Sexiest Job of the 21st century'. As a Data Scientist, you'll determine the business questions that need answers, and then come up with different approaches to try and solve the problem.

- Gather, merge and analyze data to gain insights, and simplify data problems to develop strategies and predictive models
- Use a wide variety of tools like Tableau, Python, Hive, Impala, to develop and test new algorithms for faster and more accurate data analytics

The average salary for a Data Scientist is $121,235

Top Companies Hiring Data Science Professionals

Career opportunities for Data Science professionals have grown exponentially to meet the demands of digitally transformed industries, and newer job roles keep emerging in the field

Top 10 Big Data skills:

- Data Mining
- Python
- AI
- Java
- Hadoop
- Data Visualization
- Probability and Statistics
- Machine Learning
- Apache Spark
- SQL

ANALYST, SCIENTIST, ENGINEER

The first step on your path to professional data professional? Taking stock of your three main career options: Data Analyst, Data Scientist, and Data Engineer.

Data Analyst

A data analyst is essentially a junior data scientist. It's the perfect place to start if you're new to a career in data and eager to cut your teeth. Data analysts don't have the mathematical or research background to invent new algorithms, but they have a strong understanding of how to use existing tools to solve problems.

Skills and tools

Data analysts need to have a baseline understanding of five core competencies: programming, statistics, machine learning, data munging, and data visualization. Beyond technical skill, attention to detail and the ability to effectively present results are equally important to be successful as a data analyst.

How it translates

Data analysts are given direction from more experienced data professionals in their organization. Based on that guidance, they acquire, process, and summarize data. Data analysts are the ones managing the quality assurance of data scraping, regularly querying databases for stakeholder requests, and triaging data issues to come to timely resolutions. They also then package the data to provide digestible insights in narrative or visual form.

An enduring curiosity about data and close examination of evolving best practices and tools serves all data professionals well, no matter the level of seniority.

Data Scientist

Some companies treat the titles of "Data Scientist" and "Data Analyst" as synonymous. But there's really a distinction between the two in terms of skill set and experience. Though data scientists and data analysts have the same mission in an organization—to glean insights from the massive pool of data available—a data scientist's work requires more sophisticated skills to tackle a higher volume and velocity of data.

As such, a data scientist is someone who can do undirected research and tackle open-ended problems and questions. Data scientists typically have advanced degrees in a quantitative field, like computer science, physics, statistics, or applied mathematics, and they have the knowledge to invent new algorithms to solve data problems.

Data scientists are extremely valuable to their companies, as their work can uncover new business opportunities or save the organization money by identifying hidden patterns in data (for example, highlighting surprising customer behavior or finding potential storage cluster failures).

Skills and tools
Whereas a data analyst might look at data from only a single source, a data scientist explores data from many different sources. Data scientists use tools like Hadoop (the most widely used framework for distributed file system processing), they use programming languages like Python and R, and they apply the practices of advanced math and statistics.

The exact set of skills differs by organization and project, but this example from Data

Science London gives a sense of how complex the data scientist's toolkit can be:

The most valuable nontechnical skill a data scientist brings to the table is an intense inquisitiveness. Data scientists have to be driven to pose questions and hunt down solutions, and in so doing to unearth information that could transform a business.

How it translates

Data scientists essentially leverage data to solve business problems. They interpret, extrapolate from, and prescribe from data to deliver actionable recommendations. A data analyst summarizes the past; a data scientist strategizes for the future.

Data scientists could identify precisely how to optimize websites for better customer retention, how to market products for stronger customer lifecycle value, or how to fine-tune a delivery process for speed and minimal waste

Data Engineer

A data engineer builds a robust, fault-tolerant data pipeline that cleans, transforms, and aggregates unorganized and messy data into databases or data sources. Data engineers are typically software engineers by trade. Instead of data analysis, data engineers are responsible for compiling and installing database systems, writing complex queries, scaling to multiple machines, and putting disaster recovery systems into place.

Data engineers essentially lay the groundwork for a data analyst or data scientist to easily retrieve the needed data for their evaluations and experiments.

Skills and tools
Whereas data scientists extract value from data, data engineers are responsible for making sure that data flows smoothly from source to destination so that it can be processed. As such, data engineers have deep knowledge of and expertise in:

- Hadoop-based technologies like MapReduce, Hive, and Pig

- SQL based technologies like PostgreSQL and MySQL

- NoSQL technologies like Cassandra and MongoDB

- Data warehousing solutions

How it translates
Data engineers do the behind-the-scenes work that enables data analysts and data scientists to do their jobs more effectively.

MAP TO THE FUTURE

Get an in-depth understanding of mathematics that forms the basis of every numerical computation and algorithm in data science.

Mathematics
Statistics |
Probability |
Calculus

Understand and get hands-on experience in programming languages to implement various algorithms.

Have a sound database knowledge to deal with the structured data stored in RDBMS.

Programming
Python | R | SAS

Database knowledge
Oracle |
MySQL |
Cassandra

Master data engineering skills to clean and process a massive amount of data to avoid missing values

Learn and implement machine learning algorithms to create predictive models.

Data Engineering
Data preprocessing |
Data wrangling |
SQL

Machine Learning
Supervised learning |
Unsupervised learning |
Reinforcement learning

Get an added advantage by learning Hadoop and Spark to easily store, process and manipulate data.

Get a thorough understanding of Deep Learning and its algorithms to work with vast volumes of unstructured data.

Big Data
Hadoop | Spark

Deep Learning
TensorFlow | Artificial Neural Network |
Deep Belief Network |
Generative Adversarial Network

Master different data visualization tools to build interactive plots and dashboards to derive business insights.

Data Visualization
Tableau | QlikView

Data Scientist

WHAT DO DATA SCIENTISTS DO?

Let's now go back to that possibly canonical, possibly apocryphal Harvard Business Review article about Data Scientist being the sexiest job of the 21st century. In that article, the authors describe what Data Scientists do in admittedly rather fanciful terms:

"What data scientists do is make discoveries while swimming in data. It's their preferred method of navigating the world around them. At ease in the digital realm, they are able to bring structure to large quantities of formless data and make analysis possible. They identify rich data sources, join them with other, potentially incomplete data sources, and clean the resulting set. In a competitive landscape where challenges keep changing and data never stop flowing, data scientists help decision makers shift from ad hoc analysis to an ongoing conversation with data."

And as to who does this kind of thing?

"Think of him or her as a hybrid of data hacker, analyst, communicator, and trusted adviser."

If that sounds romantic, exciting, and, yes, sexy, then Data Scientist is right up your alley. But if that prose is a bit too purple for you, consider the following as an alternative summation:

Learn to:
- Wrangle, extract, transform, and load data from various databases, formats, and data sources
- Use exploratory data analysis techniques to identify meaningful relationships, patterns, or trends from complex data sets
- Classify unlabeled data or predict into the future with applied statistics and machine learning algorithms
- Communicate data analysis and findings through effective data visualizations

In conclusion, I think we can safely say that just as data is here to stay, so too are those who make a science of understanding it. If you're seeking a career path that comes with opportunity, demand, a great salary, and unrivaled work-life balance, then it's a great time to look at becoming a Data Scientist!

LET THE LEARNING BEGIN

The growth of fields like Data Science and AI has increased the demand for talented minds to help solve pressing business challenges faster and better. However, quitting a full-time job to go back to school isn't realistic for most people, and this is where Institute i4 comes into play. We're an immersive online learning platform offering excellent courses with self-paced learning and live virtual classroom options available. With our highly-detailed course of study, you'll master everything you need to know to make a splash in these thriving fields. At Institute i4, our industry experts deliver course content through a format that adapts to your pace of learning. Start one of our courses in Data Science today and kickstart your career in the lucrative field of Data Science.

The courses we offer:

- Data Analysis – Practice Course
- Business Data Analysis – Certification Training

Visit our website to learn more:
https://institutei4.com/home/data -analysis-module-1/