



THE UNIVERSITY
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Data Science MSc

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Data

The **most important asset** of any enterprise

⇒ Enable and **support decision making**



Data

The **most important asset** of any enterprise

Must be **effectively, efficiently and reliably**

- collected and stored
- maintained and updated
- processed and analysed

to be **turned into meaningful information**

⇒ Enable and **support decision making**



Different kinds of data

Relational databases

Data organised in tables (relations) with typed attributes

Document stores

Text documents structured using tags (or other markers)

Graph databases

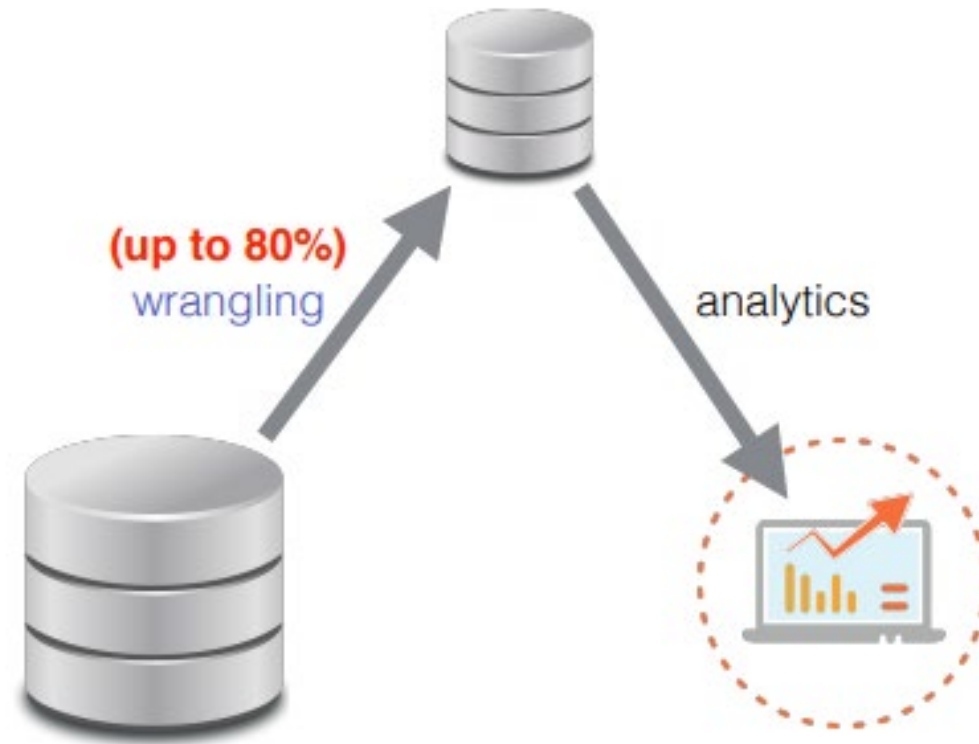
Data organised in graph structures with nodes and edges

Key-value stores

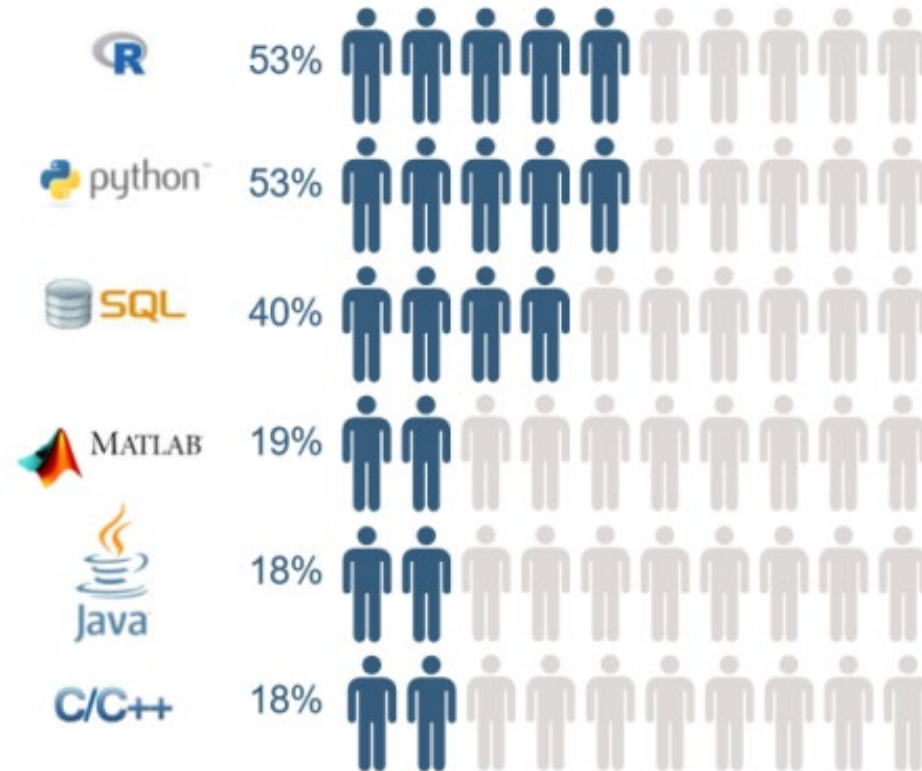
Data organised in associative arrays (a.k.a. dictionaries or maps)



Access, integration and manipulation of large volumes of data are at the **core** of data analysis



Skills needed to become a Data Scientist



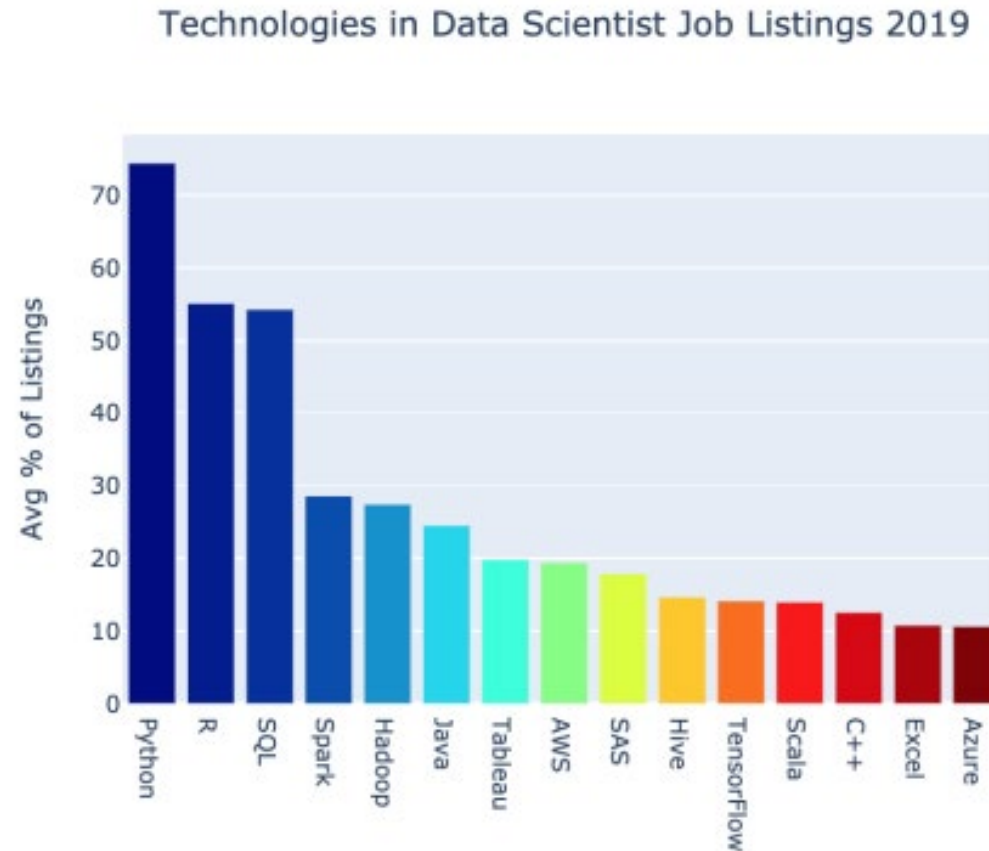
<https://towardsdatascience.com/what-are-the-skills-needed-to-become-a-data-scientist-in-2018-d037012f1db2>



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Skills needed to become a Data Scientist



<https://www.kdnuggets.com/2019/12/most-demand-tech-skills-data-scientists.html>



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Skills needed to become a Data Scientist



<https://365datascience.com/skills-data-scientist/>



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Technology stack

Python + cloud platform (such as AWS or Azure)
+ ML framework (such as PyTorch or TensorFlow)

Data experience

Analysis of datasets with

- numerical frameworks such as MATLAB or R
- Python libraries such as NumPy, SciKit, Pandas, etc.

Environment

Unix/Linux, familiarity with shell scripting (e.g., Bash)



Skills overview

Hard skills

- Training and evaluating machine learning models
- Proficiency querying data with SQL
- A strong understanding of probability + statistical and systematic uncertainty

Soft skills

- Confidence in communication with both technical and non-technical audiences
- Self-motivation in the face of challenges



Programme structure

[<http://www.drps.ed.ac.uk/24-25/dpt/ptmscdatsc1f.htm>]

Mandatory courses (80 credits)

- Informatics Research Review (IRR) 10 credits
- Informatics Project Proposal (IPP) 10 credits
- MSc Dissertation 60 credits

Elective courses (80-100 credits)

Selection from 3 areas:

- Machine Learning, Statistics and Optimization 10-60 credits
- Databases and Data Management 10-60 credits
- Applications 10-60 credits

Other courses (0-20 credits)

- Level 10/11 courses (can be from schools outwith Informatics)



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Programming Courses

For students who have

- less than two semesters of programming experience, or
- never written a large application or optimised code

Programming Skills

Language C, Python, Fortran 90, Java

School EPCC (within Informatics)

Requirements previous programming experience

Focus high quality code for High-Performance Computing (HPC)

Quota yes, with priority given to EPCC students



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Programming Courses

For students who have

- less than two semesters of programming experience, or
- never written a large application or optimised code

Computer Programming for Speech and Language Processing

Language Python

School Philosophy, Psychology, and Language Sciences (PPLS)

Requirements no previous experience, starts from scratch

Focus Natural Language Processing (NLP)

Quota yes, with priority given to PPLS students



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Hear from a current Data Science MSc student Gwennan Drouillet

Who am I?

- MSc Data Science student
- Bachelors in Maths and Statistics
 - University of Warwick



Why this Masters?

- Edinburgh
- The programme
 - Wide range of modules
 - Great reputation



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Experience on the Programme

- The cohort
 - Very international
 - Different academic backgrounds
- Modules I'm taking
 - Preparation for the dissertation
 - Data-Driven Business and Behaviour Analytics
 - Intro to Databases
 - Machine Learning Practical
- Careers service
 - 3-day careers fair – career advice, range of employers
 - CV and cover letter review
 - Many other opportunities – talks, hackathons, etc



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