INTRODUCTION TO DATA SCIENCE

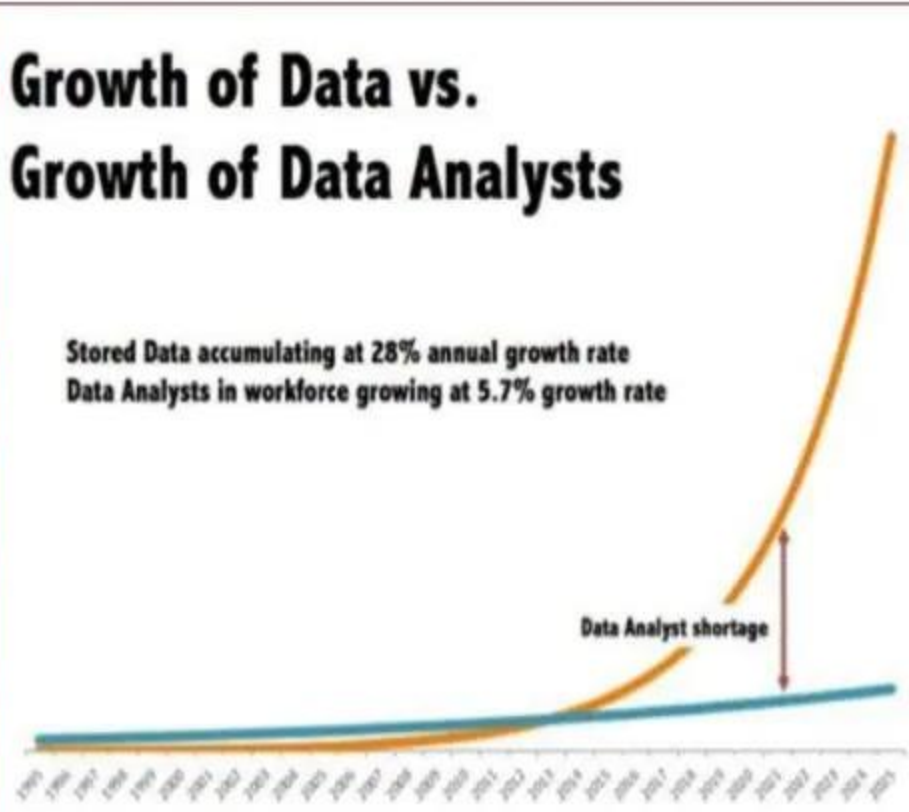
LEARNING OBJECTIVES

- Apprehend the field of Data Science impact and importance in the society
- Reflect on its applications, importance and advantages

CONTENTS

- Why should study Data Science?
- How Does Data Science Impact Organizations?
- Application and Competitive Advantage of Data Science in Organization
- Importance of Data Science to Society
- Road to Become a Data Scientist

WHY WE ARE TALKING ABOUT DATA SCIENCE?



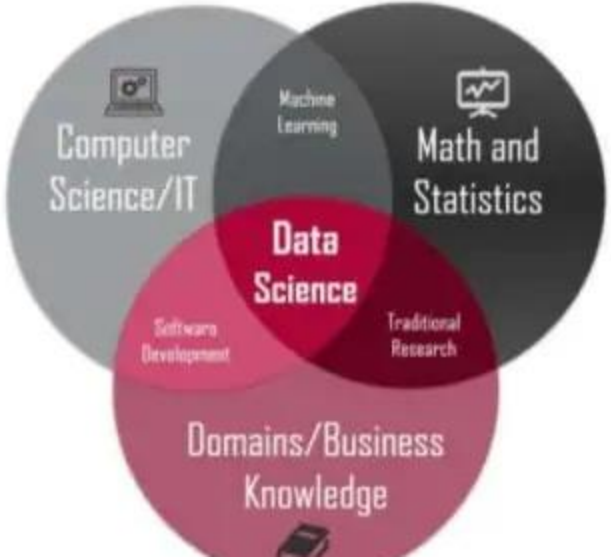
WHAT IS DATA SCIENCE?

- a multi-disciplinary field that uses scientific methods, processes, algorithms and systems to extract knowledge and insights from structured and unstructured data.

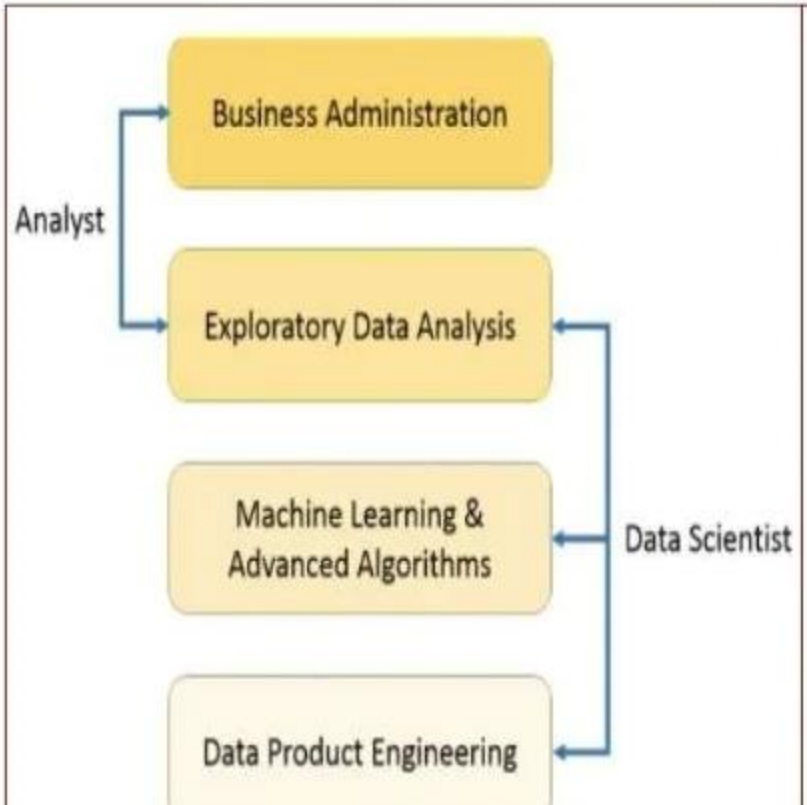
WHAT IS DATA SCIENCE?

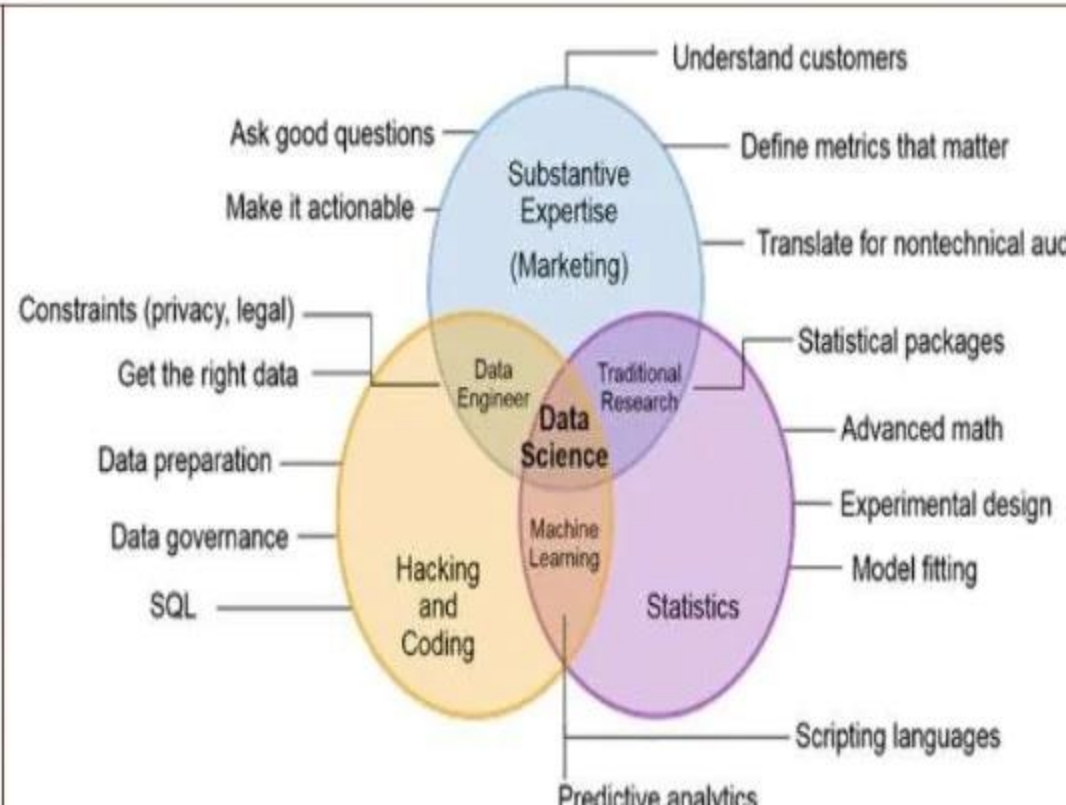
- a "concept to unify statistics, data analysis, machine learning and their related methods" in order to "understand and analyze actual phenomena" with data.

- employs techniques and theories drawn from many fields within the context of mathematics, statistics, computer science, and information science



WHAT IS DATA SCIENCE?

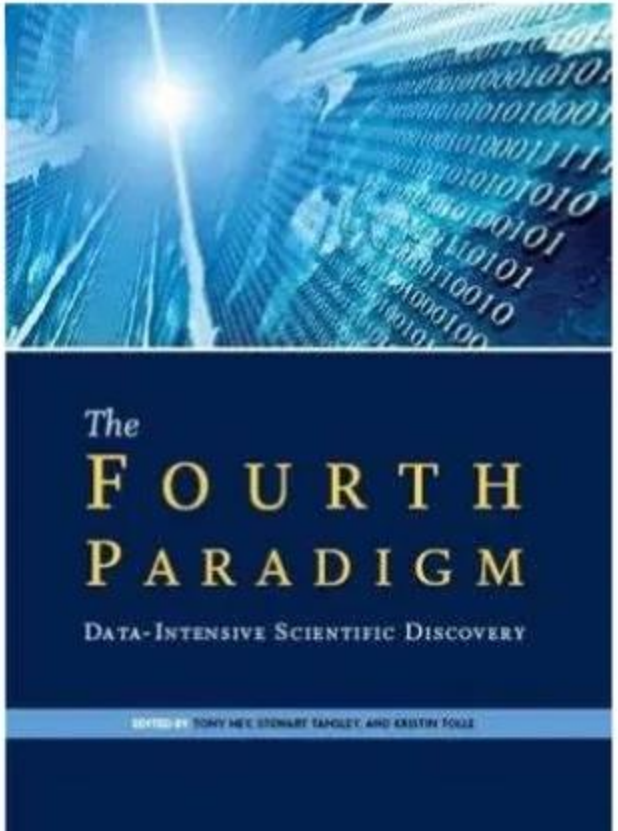




WHAT IS DATA SCIENCE?

Fourth Paradigm of Science

- Thousand of years
  - Empirical
- Few hundred of years
  - Theoretical
- Last fifty years
  - Computational
  - "Query the world"
- Last twenty years
  - eScience (Data Science)



WHAT IS DATA SCIENCE?

Data Science and others

- Statistics
- Big Data Analytics
- Business Analytics
- Business Intelligence
- Data(base) Management
- Visualization
- Machine Learning
- Data Mining
- Artificial Intelligence

WHAT IS DATA SCIENCE?

Big Data Science Tasks

- Facebooks
- Amazon
- Google
- LinkedIn
- Netflix
- Rozetka
- Microsoft

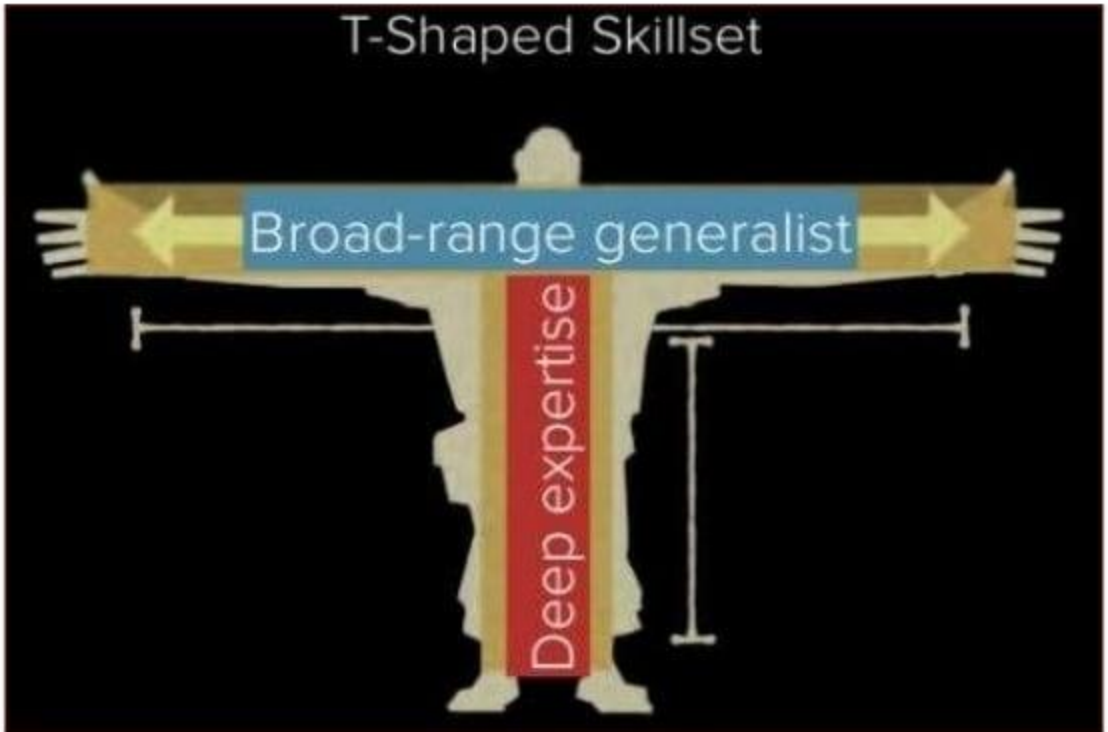
WHAT IS DATA SCIENCE?

Regular Data Science

- Data Analysis
- Modelling Statistics
- Engineering / Prototyping

WHAT IS DATA SCIENCE?

What do people look for in a data scientist?



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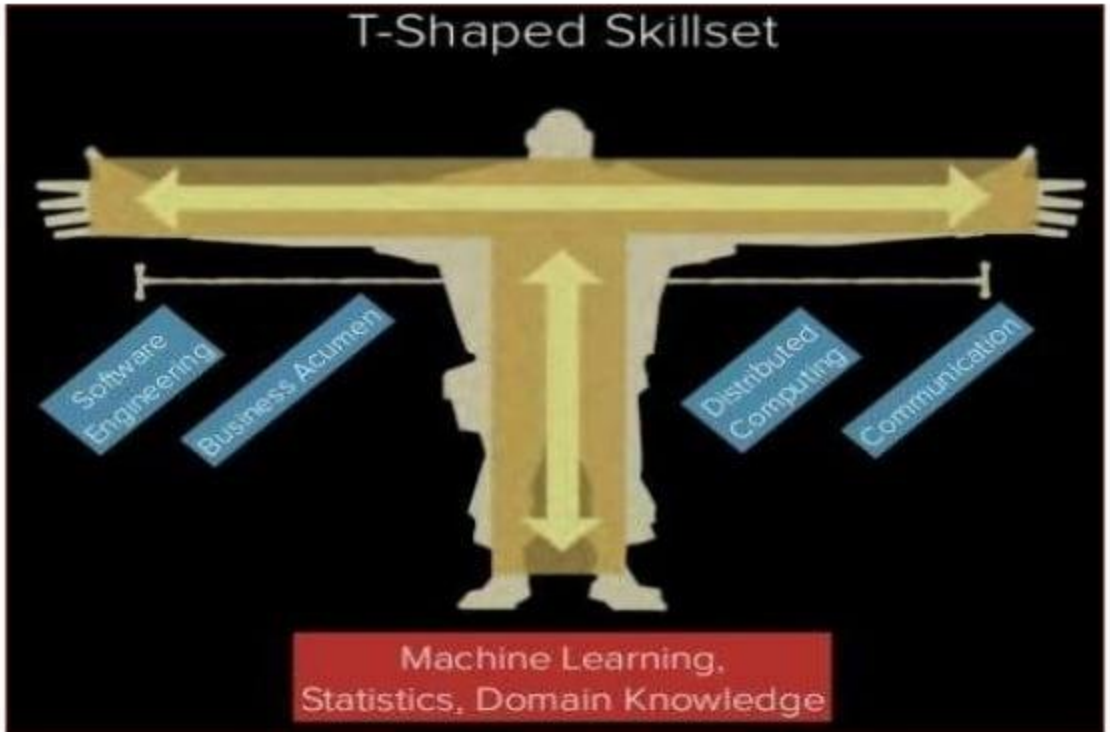
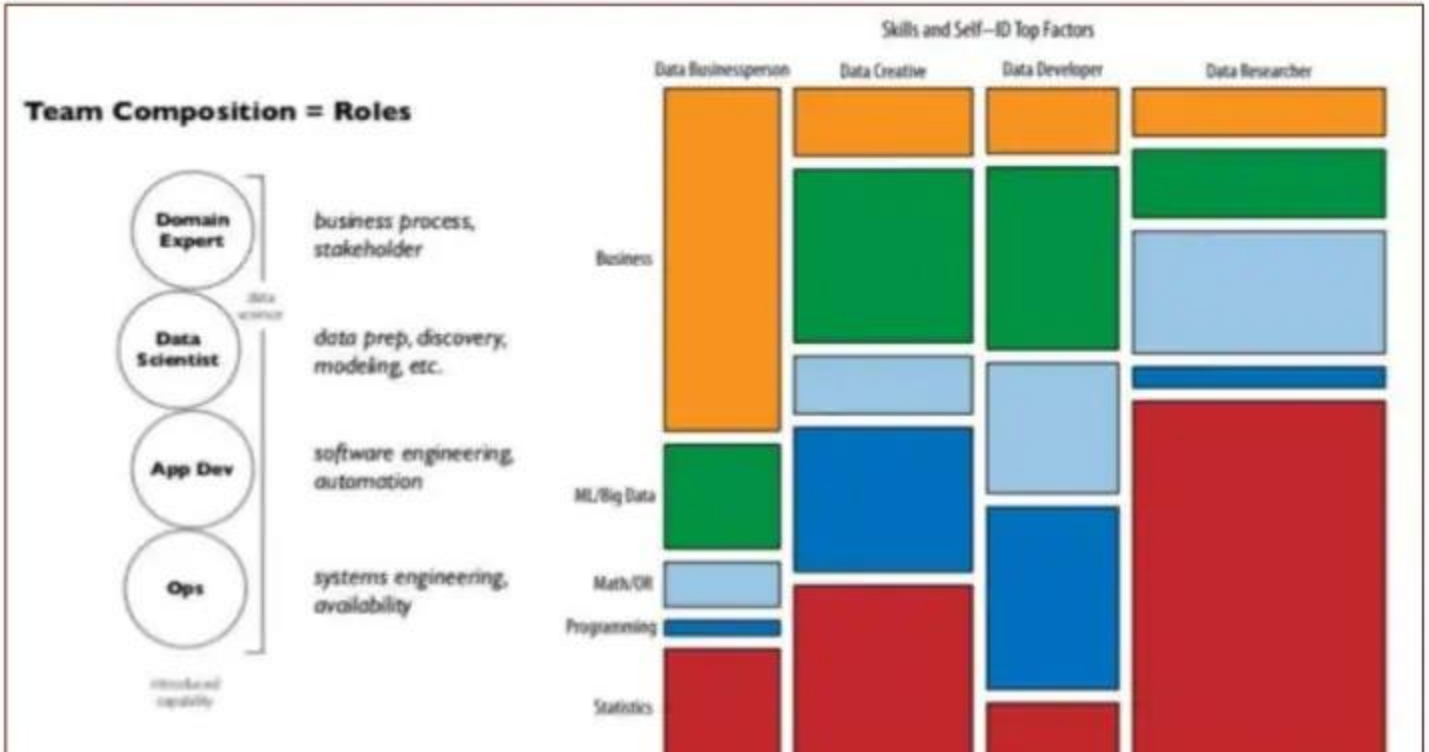


WHAT IS DATA SCIENCE?

Data Science Roles



WHAT IS DATA SCIENCE?

Roles Required in Data Science Project

Data Scientist

- Prove / disprove hypotheses.
- Information and Data gathering.
- Data wrangling.
- Algorithm and ML models.
- Communication.

Data Engineer

- Build Data Driven Platforms.
- Operationalize Algorithms and Machine Learning models.
- Data Integration.

Visualization Expert

- Storytelling.
- Build Dashboards and other Data visualizations.
- Provide insight through visual means.

Process Owner

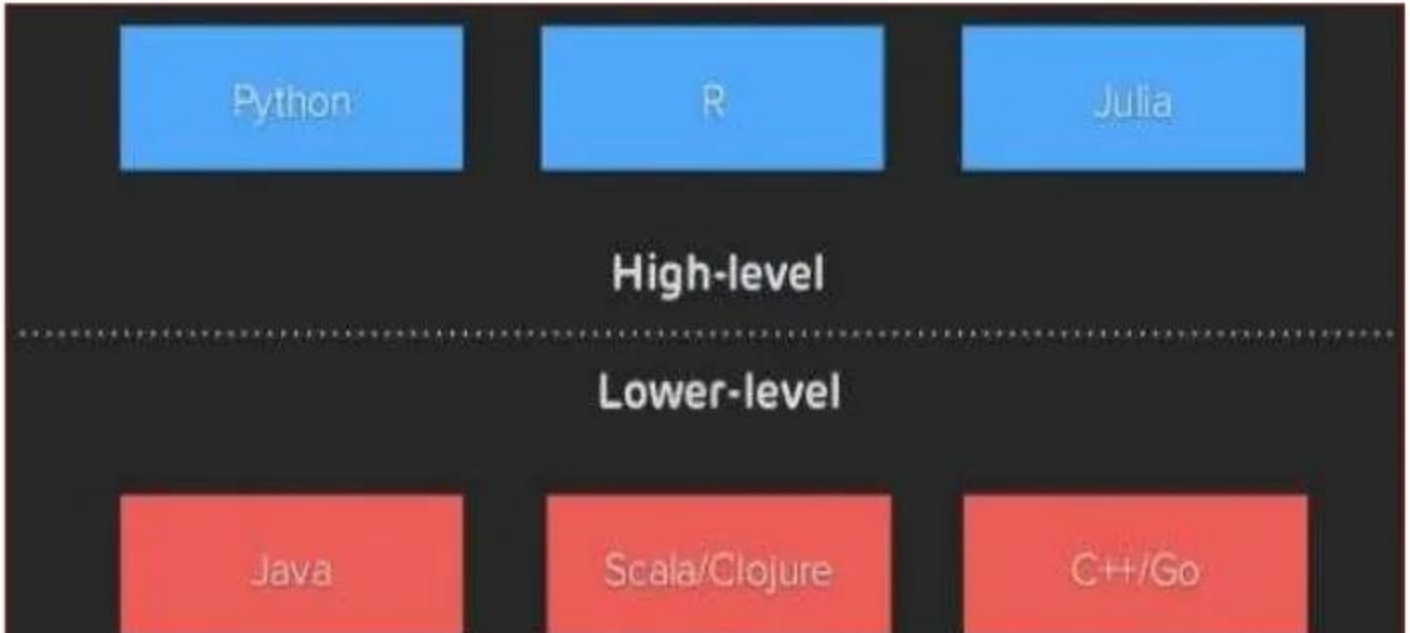
- Project Management.
- Manage stakeholder expectations.
- Maintain a Vision.
- Facilitate.

Source: https://bit.ly/2z5sYqf

WHAT IS DATA SCIENCE?

How to become a data scientist?

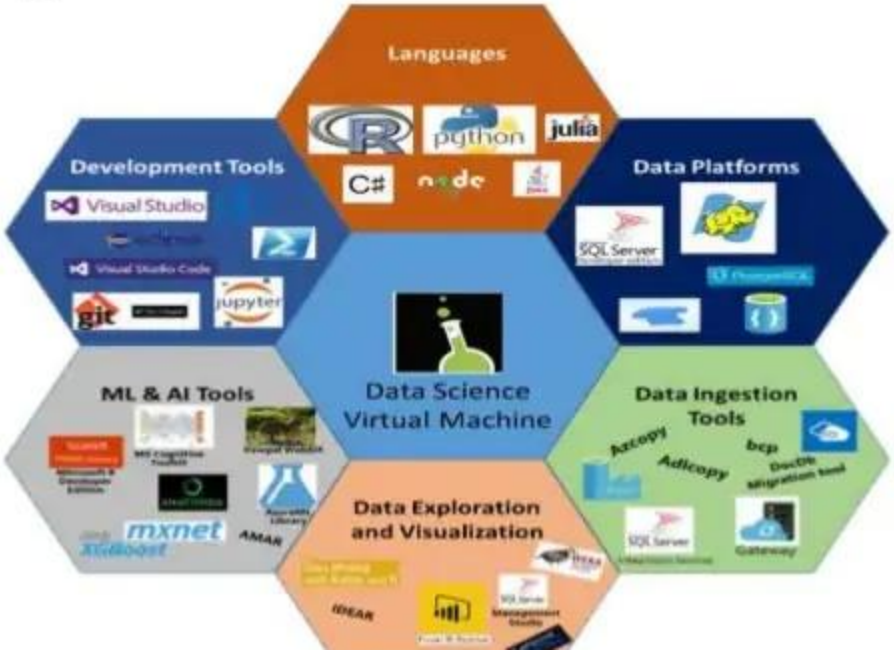
- Data Scientists need to know how to "**CODE**"



WHAT IS DATA SCIENCE?

How to become a data scientist?

- Other languages, tools, platforms and visualization



WHAT IS DATA SCIENCE?

Learning Data Science with Python - Libraries

NumPy is a library for the Python programming language, adding support for large, multi-dimensional arrays and matrices, along with a large collection of high-level mathematical functions to operate on these arrays.

A free software machine learning library that features various classification, regression and clustering algorithms including support vector machines, random forests, gradient boosting, and k-means and is designed to interoperate with the Python numerical and scientific libraries NumPy and SciPy.

Pandas is a software library written for the Python programming language for data manipulation and analysis. In particular, it offers data structures and operations for manipulating numerical tables and time series.

WHAT IS DATA SCIENCE?

Learning Data Science with Python - Libraries

matplotlib

A plotting library for the Python programming language and its numerical mathematics extension NumPy

TensorFlow

TensorFlow is an open-source software library for dataflow programming across a range of tasks. It is a symbolic math library, and is also used for machine learning applications such as neural networks.

K Keras

Keras is an open source neural network library written in Python. It is capable of running on top of TensorFlow, Microsoft Cognitive Toolkit, Theano, or MXNet. It was developed with a focus on enabling fast experimentation

WHAT IS DATA SCIENCE?

Learning Data Science with Python - Tools

Open-source web application that allows you to create and share documents that contain live code, equations, visualizations and narrative text
http://jupyter.org/

Similar to Jupyter Notebook, but with the added benefit of "google doc" type sharing and collaboration
https://colab.research.google.com

Crestle

Effortless infrastructure for deep learning

Crestle is your GPU-enabled Jupyter environment in the cloud.
https://www.crestle.com/

WHAT IS DATA SCIENCE?

How to become a data scientist?

- Learn to code

Codecademy

UDACITY

treehouse

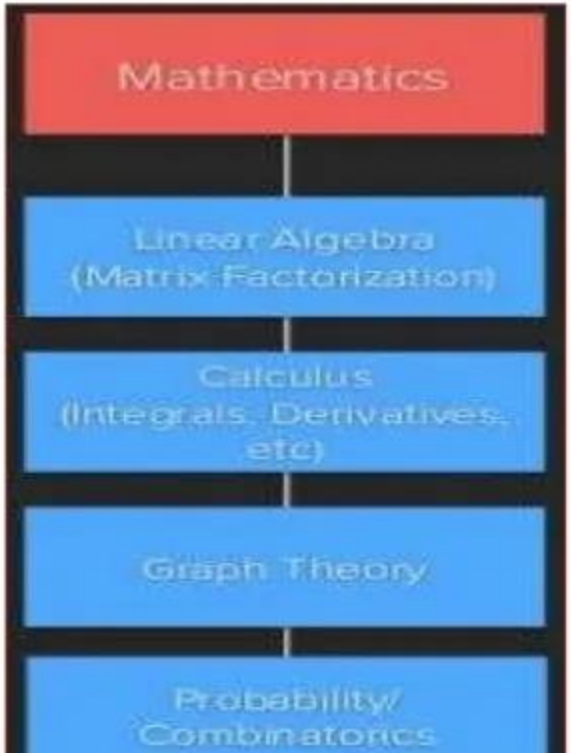
coursera

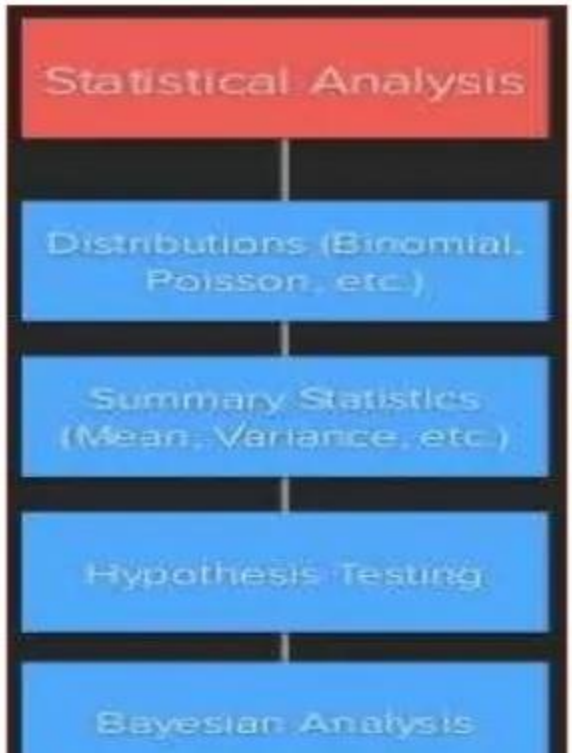
HACKERRANK

Project Euler .net

WHAT IS DATA SCIENCE?

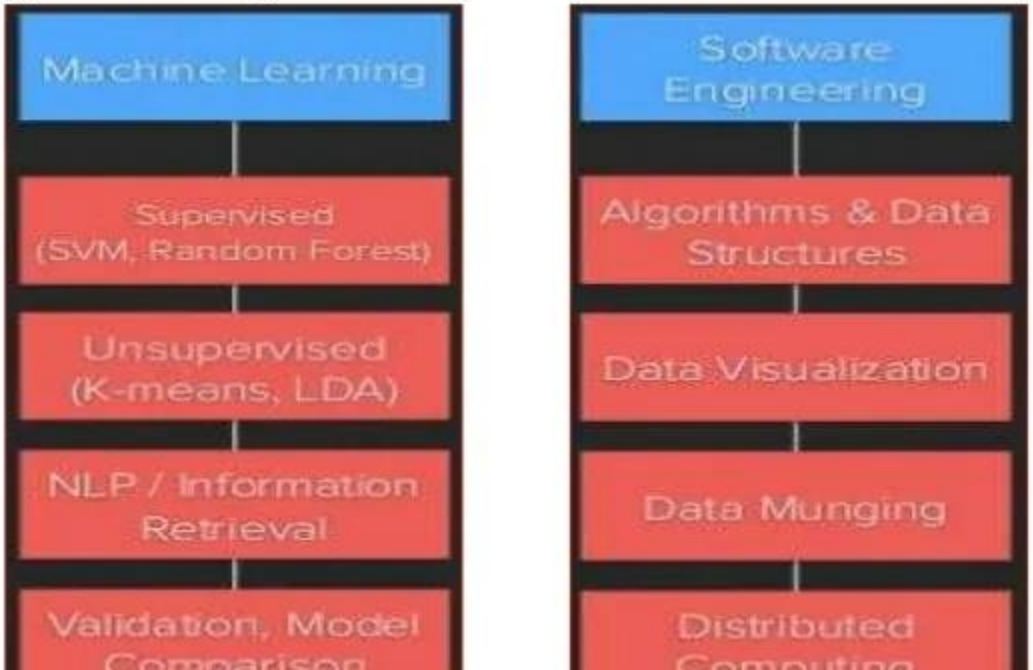
Data Scientist need to comfortable with:





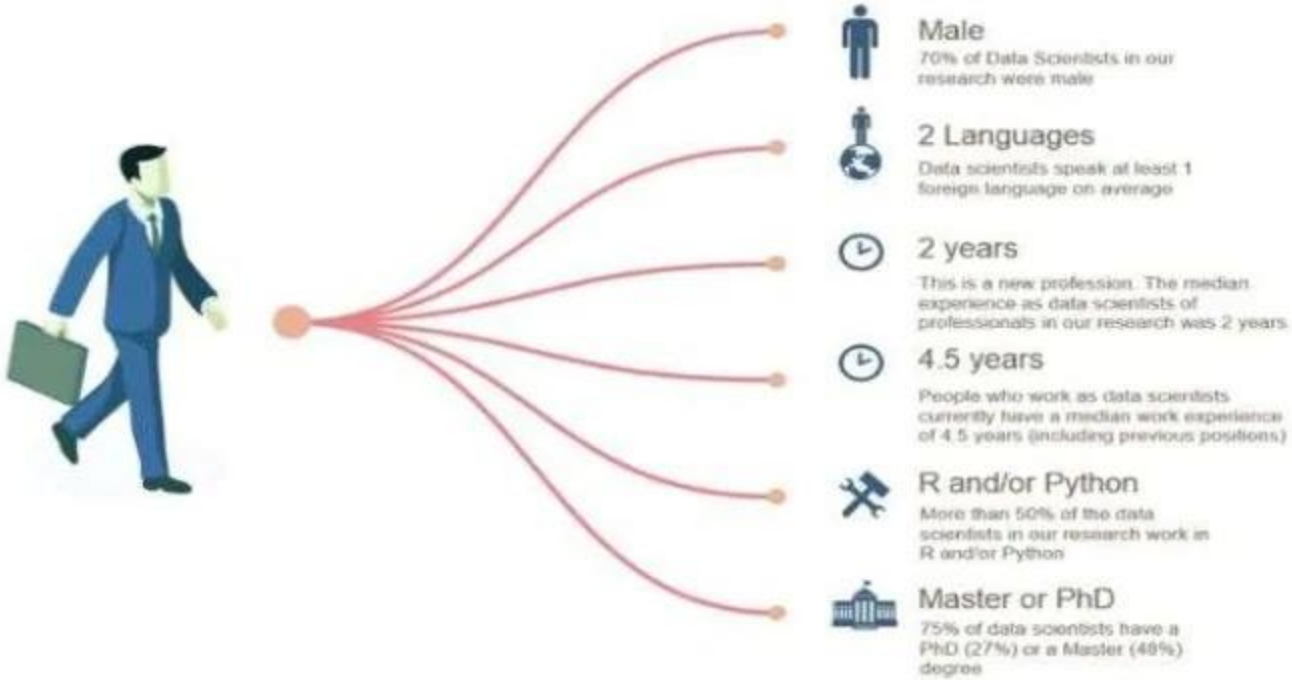
WHAT IS DATA SCIENCE?

Data Scientist need to learning machine learning & software engineering



WHAT IS DATA SCIENCE?

Who are the Data Scientist?



http://www.datascience.com/blog/data-scientist-skills

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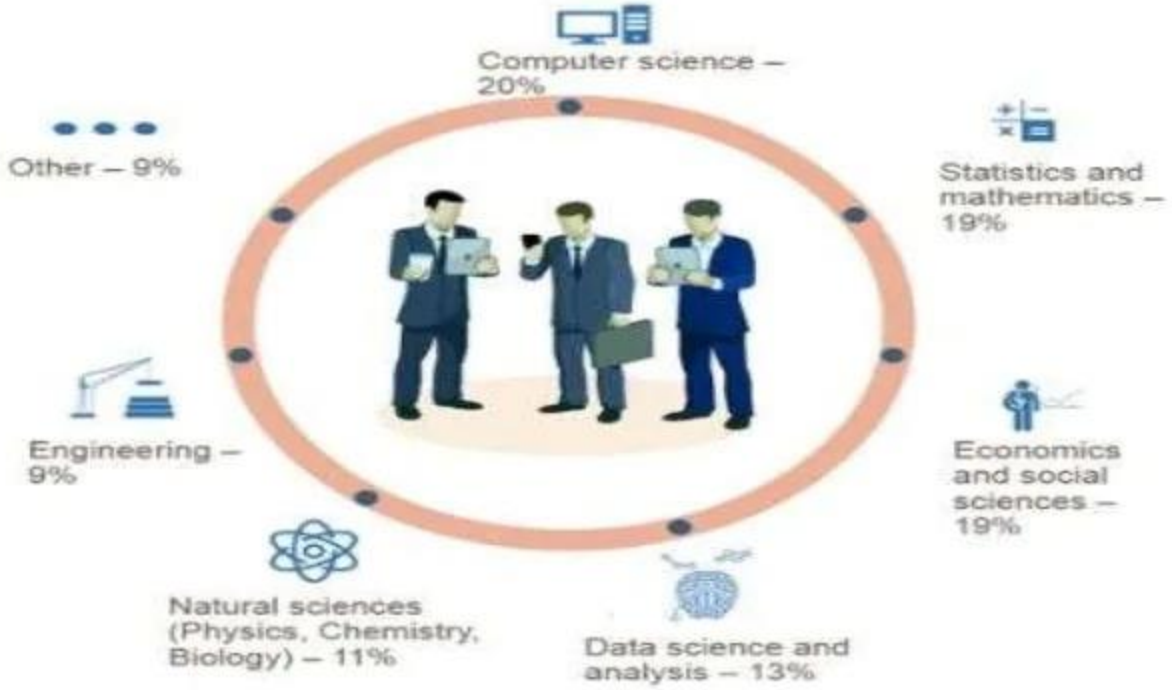

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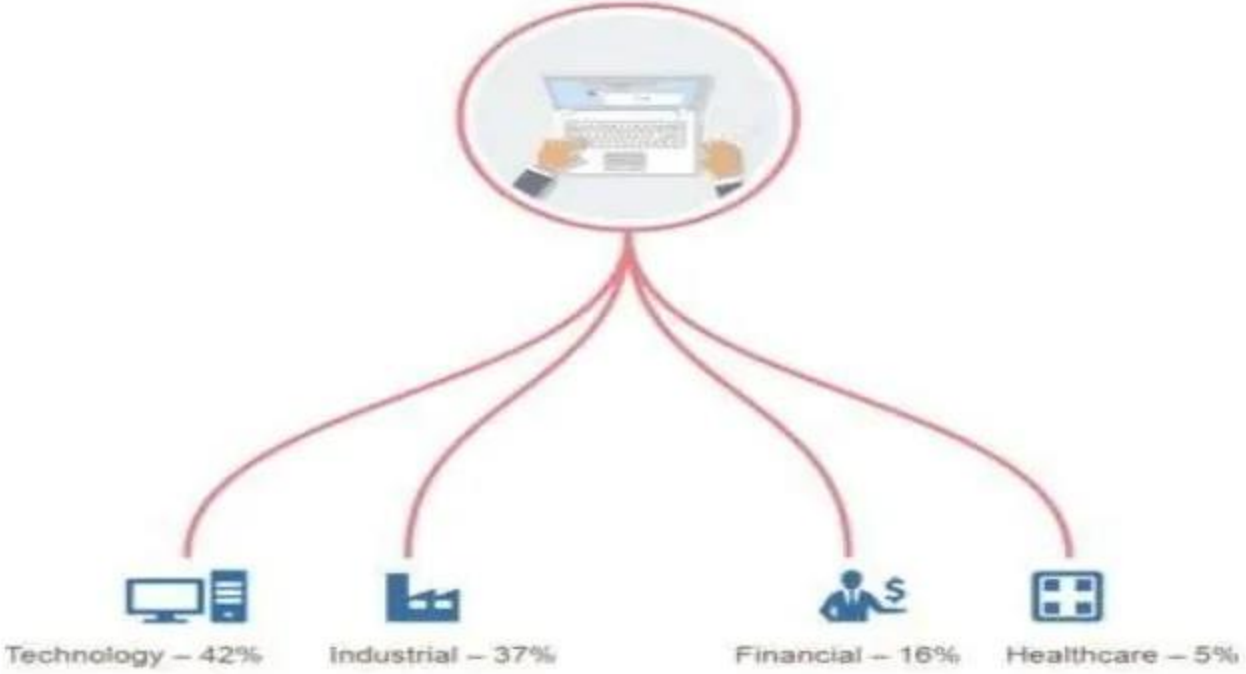

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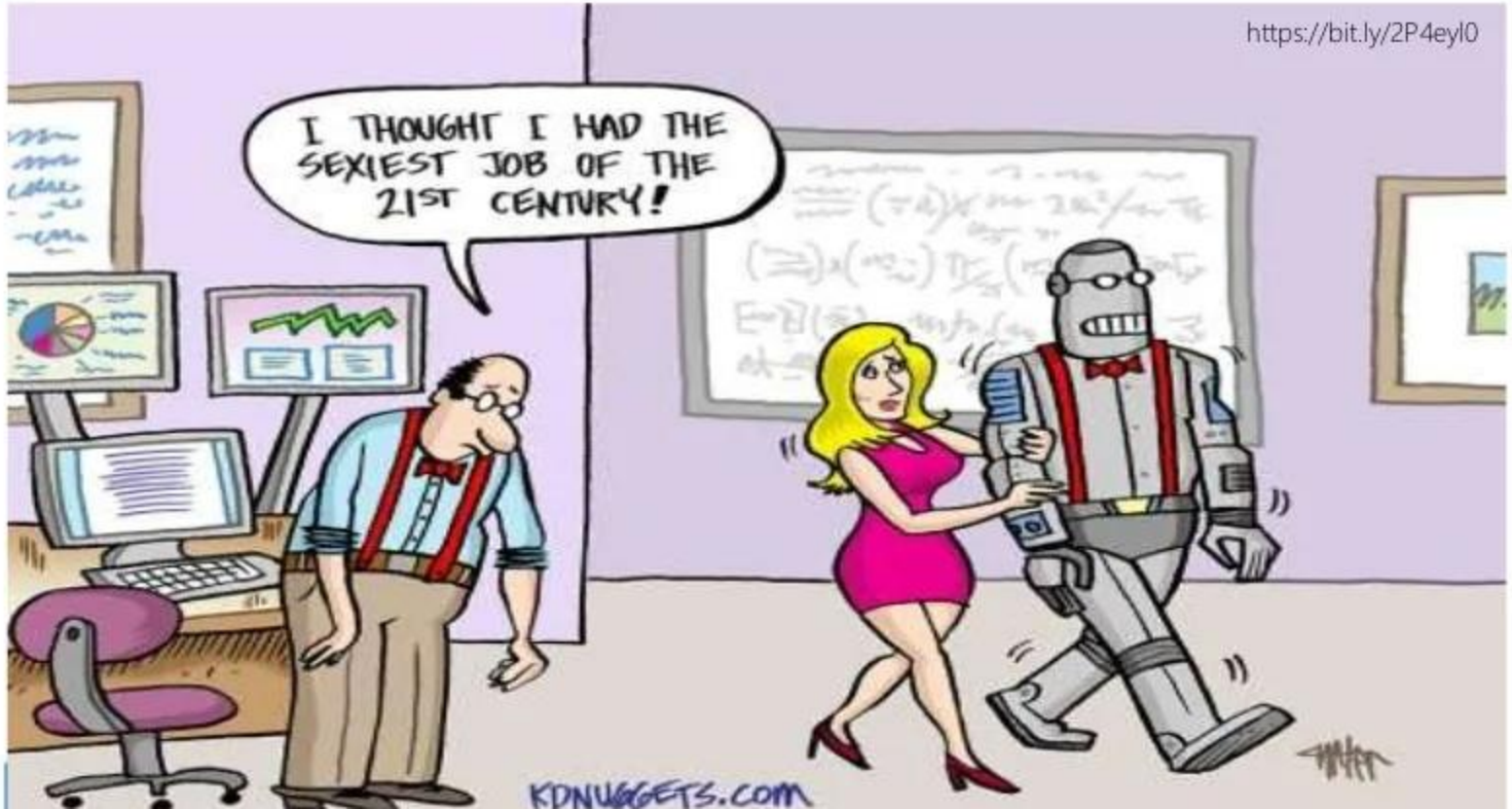
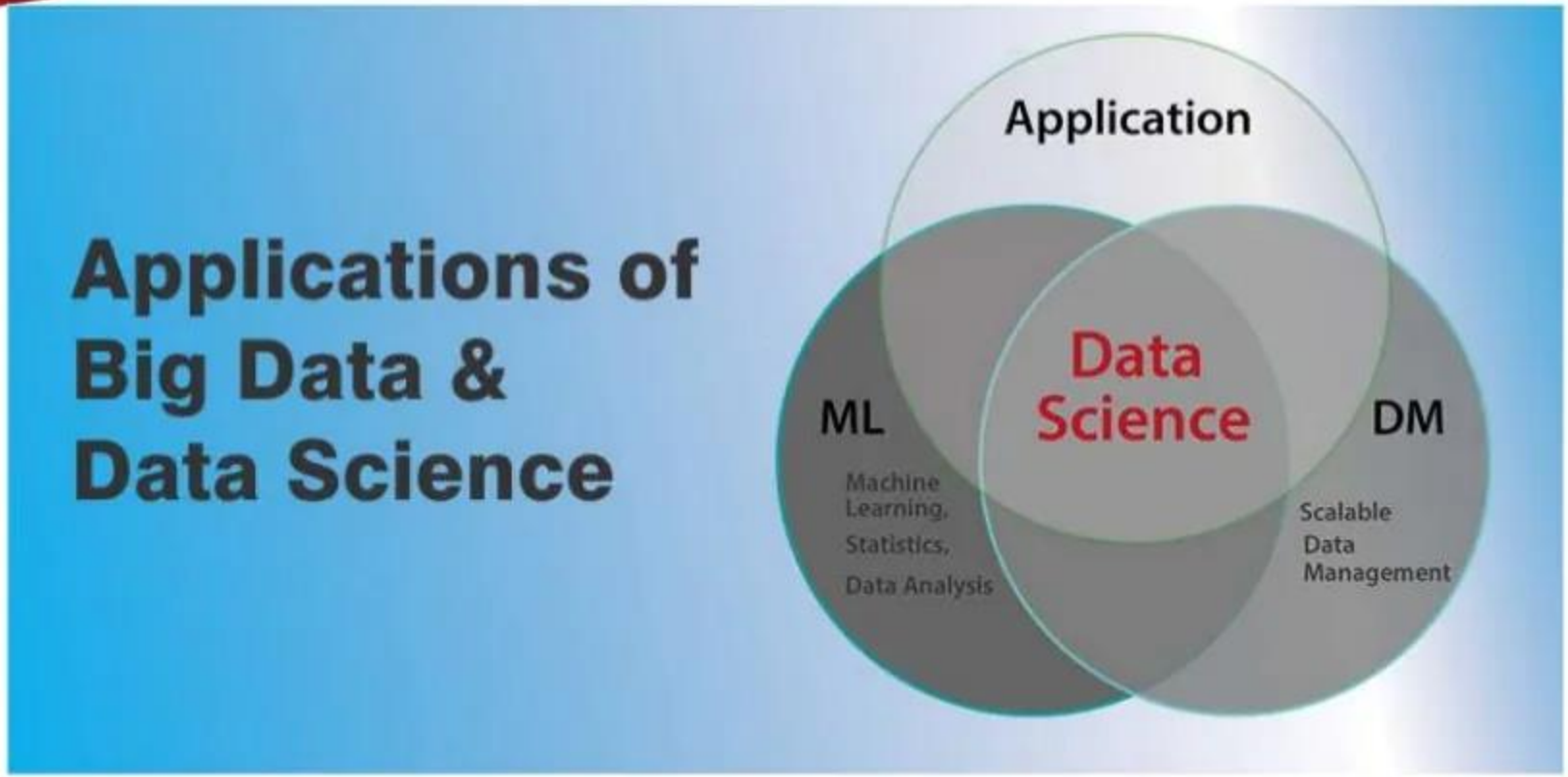




APPLICATION OF DATA SCIENCE

APPLICATIONS OF DATA SCIENCE

- Security

APPLICATIONS OF DATA SCIENCE

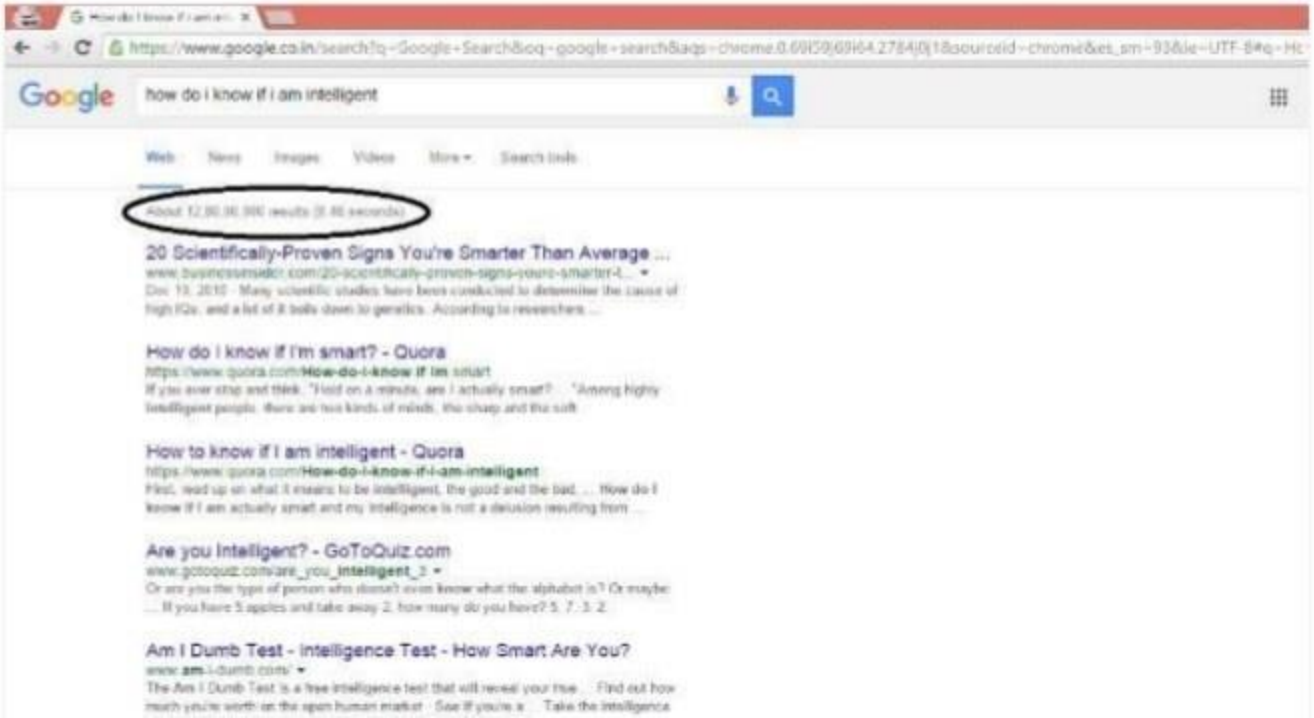
- Sports

APPLICATIONS OF DATA SCIENCE

- Banking and Finance

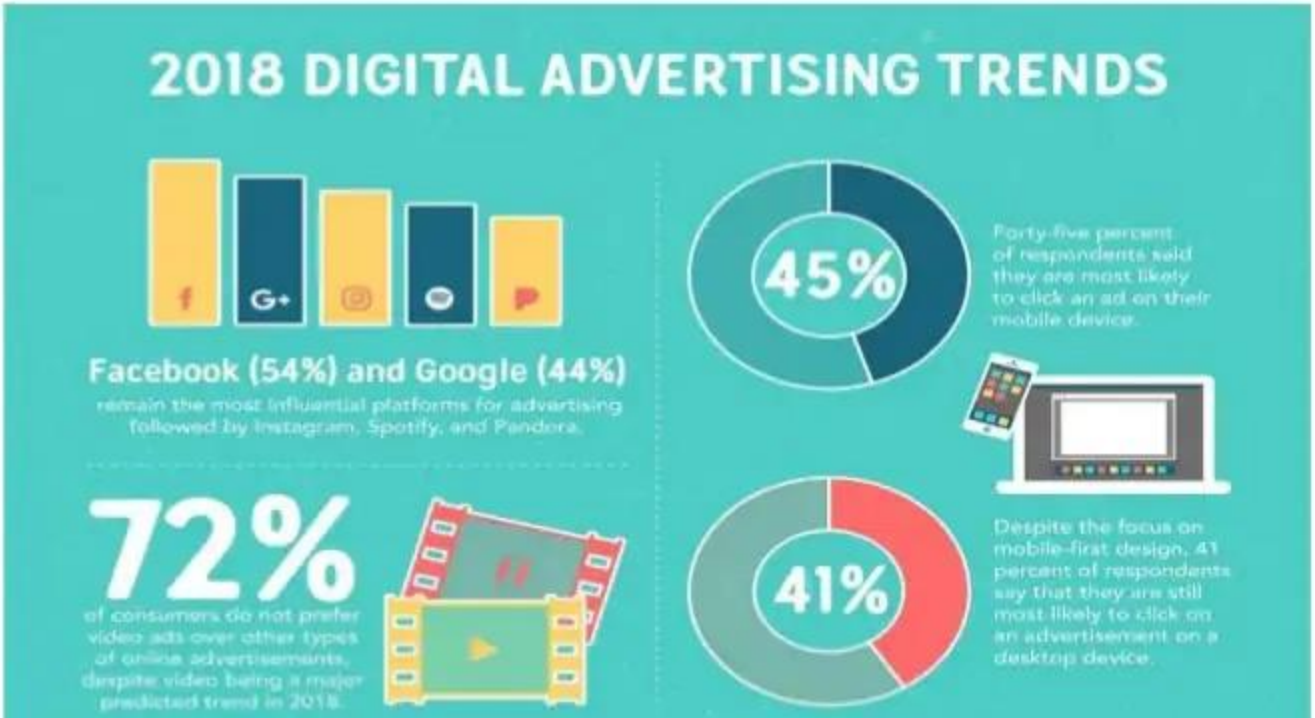
APPLICATIONS OF DATA SCIENCE

- Internet Search



APPLICATIONS OF DATA SCIENCE

- Digital Advertisements

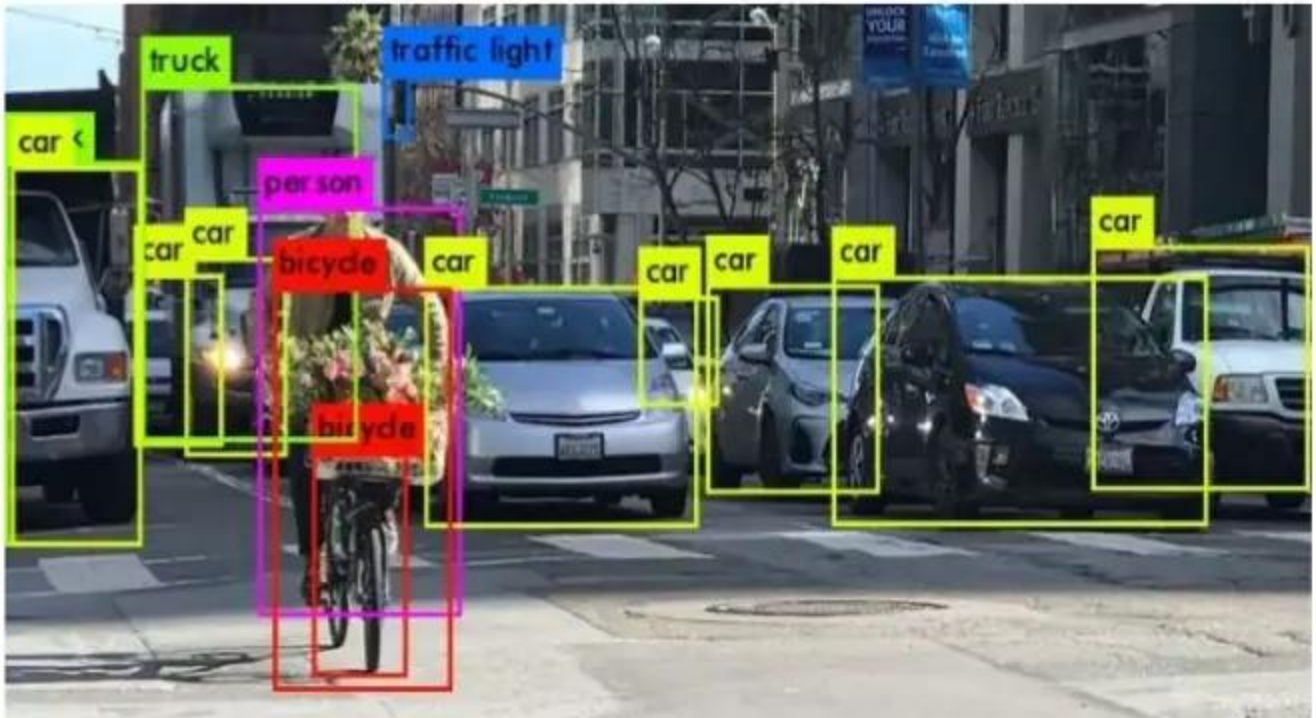


APPLICATIONS OF DATA SCIENCE

- Recommender System

APPLICATIONS OF DATA SCIENCE

- Image Processing



APPLICATIONS OF DATA SCIENCE

- Speech Recognition

APPLICATIONS OF DATA SCIENCE

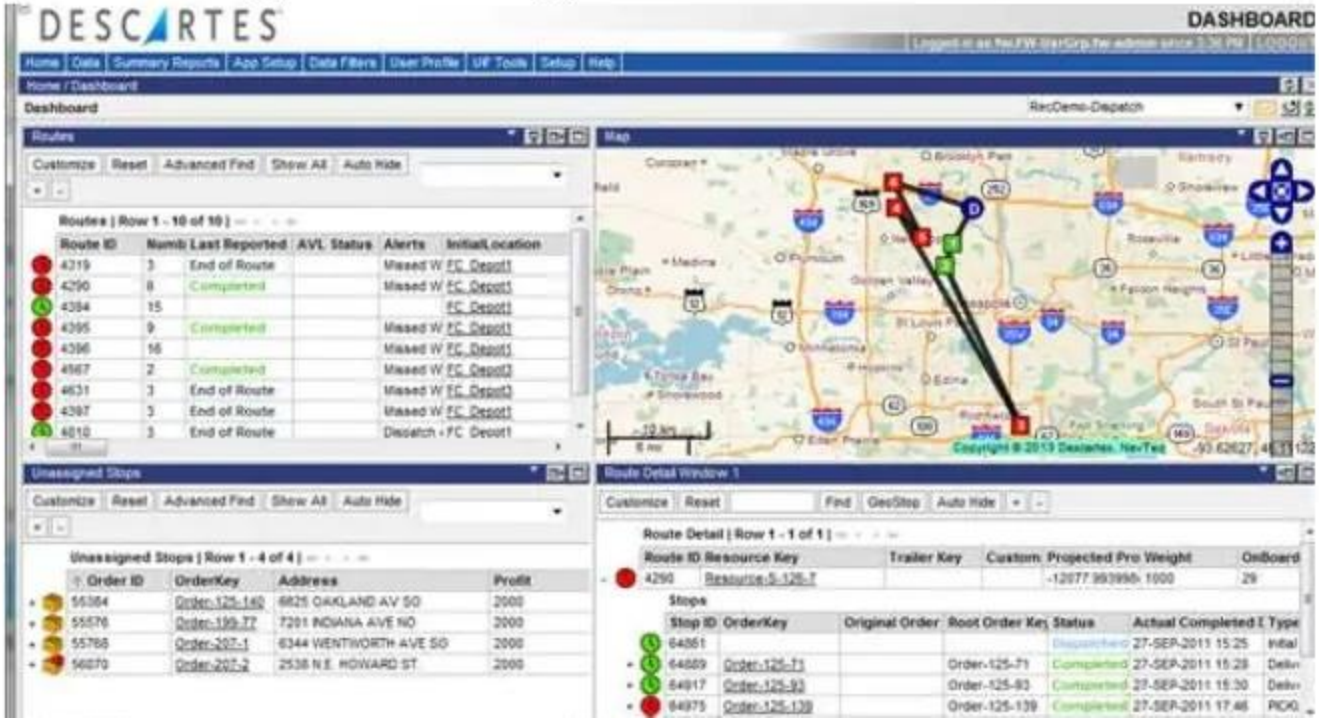
- Gaming

APPLICATIONS OF DATA SCIENCE

- Price Comparison Websites

APPLICATIONS OF DATA SCIENCE

- Airline Routing Planning



APPLICATIONS OF DATA SCIENCE

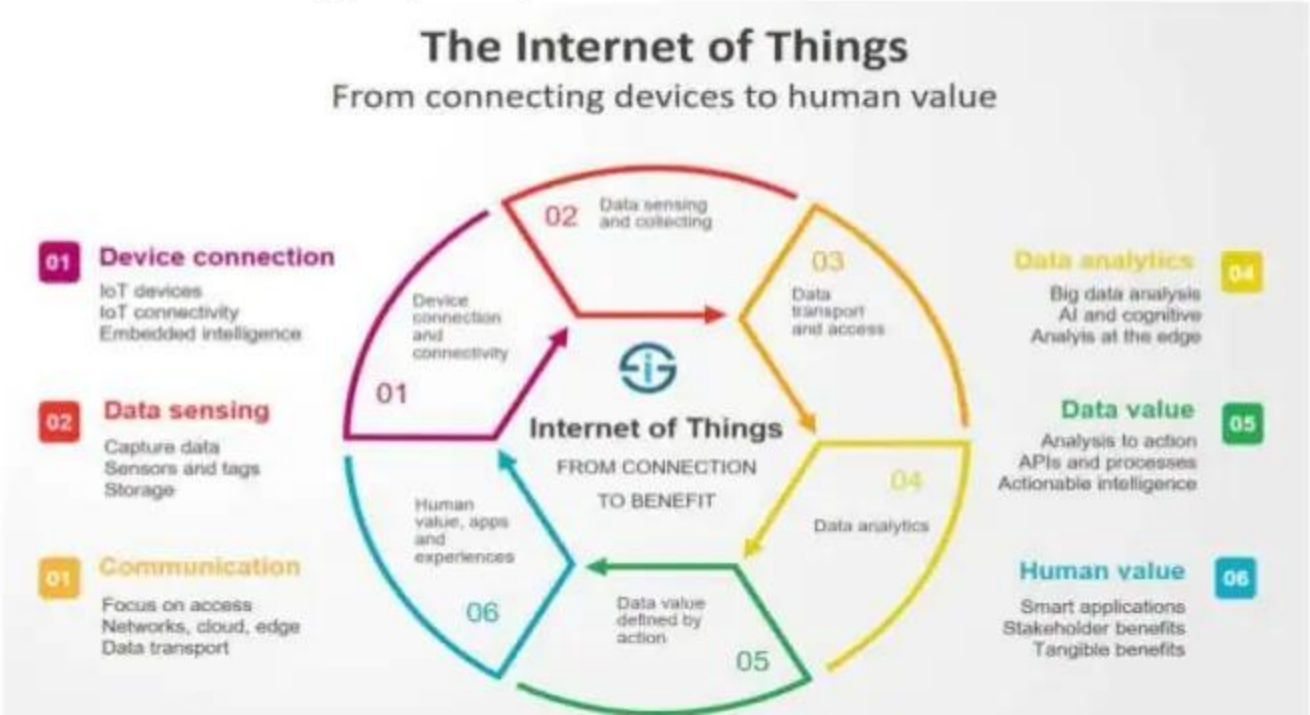
- Fraud and Risk Detection

APPLICATIONS OF DATA SCIENCE

- Delivery Logistics

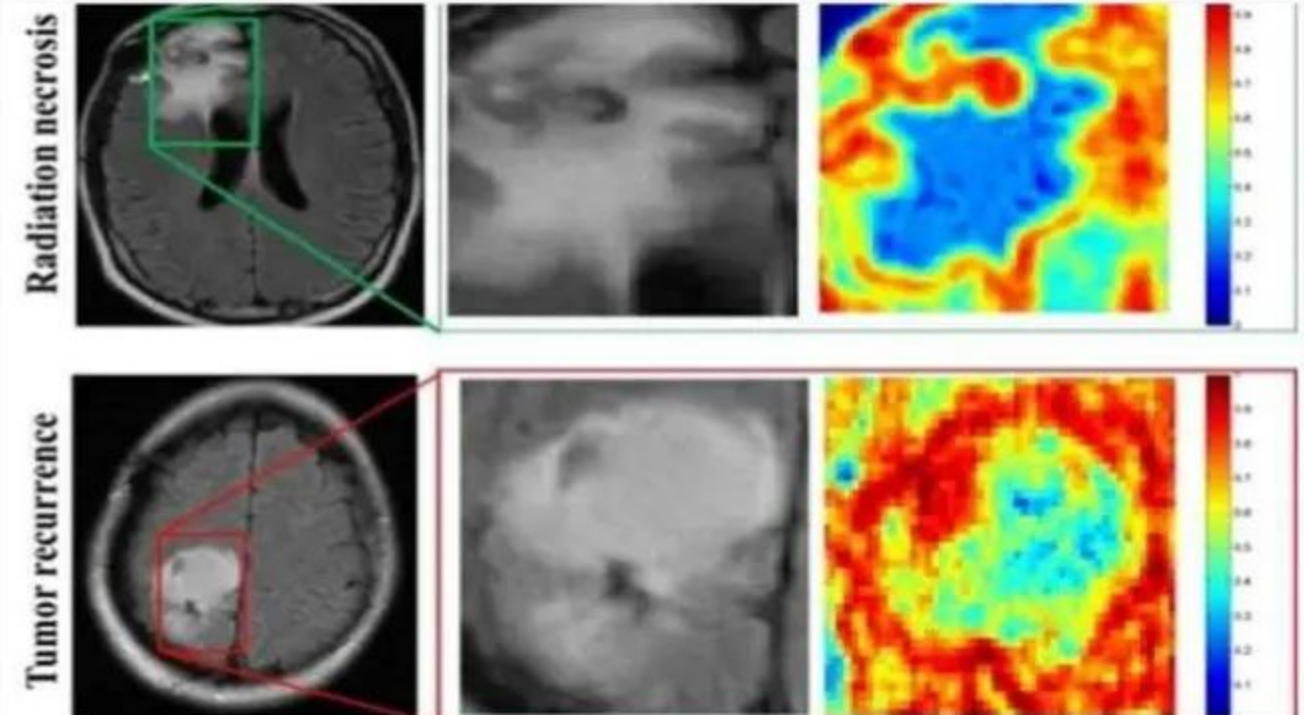
APPLICATIONS OF DATA SCIENCE

- Internet of Things (IoT)



APPLICATIONS OF DATA SCIENCE

- Health Care



APPLICATIONS OF DATA SCIENCE

- Augmented Reality

APPLICATIONS OF DATA SCIENCE

- Self-Driving Cars

APPLICATIONS OF DATA SCIENCE

- Robots

IMPACT OF DATA SCIENCE ON SOCIETY

IMPACT OF DATA SCIENCE ON SOCIETY

- Saving Energy

IMPACT OF DATA SCIENCE ON SOCIETY

- Data-Driven Hospitals

IMPACT OF DATA SCIENCE ON SOCIETY

- A Cleaner Environment

IMPACT OF DATA SCIENCE ON SOCIETY

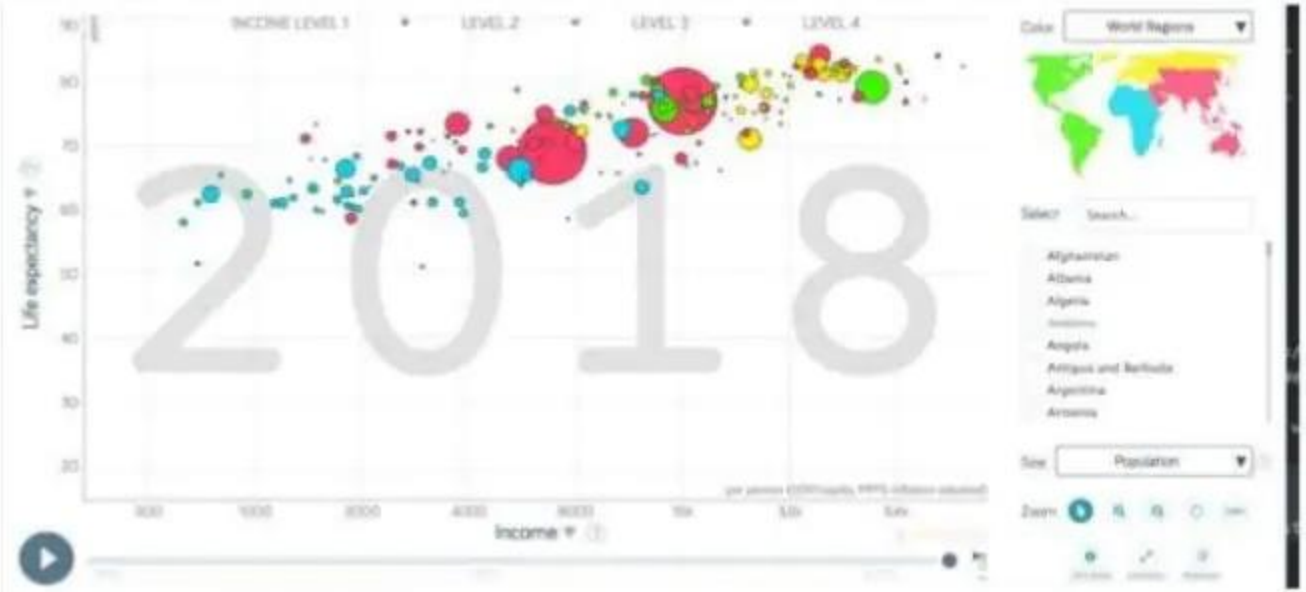
- Volunteer with a socially-oriented data science program/organization

IMPACT OF DATA SCIENCE ON SOCIETY

- Contribute via competitions

IMPACT OF DATA SCIENCE ON SOCIETY

- Consider solutions to real-world problems that you encounter



Sample data produced by Gap Minder Foundation, demonstrating the relationship between life expectancy

IMPACT OF DATA SCIENCE ON SOCIETY

- Be thoughtful in professional work

IMPORTANCE OF DATA SCIENCE

IMPORTANCE OF DATA SCIENCE

1. Data science helps brands to understand their customers in a much enhanced and empowered manner.

2. It allows brands to communicate their story in such a engaging and powerful manner.

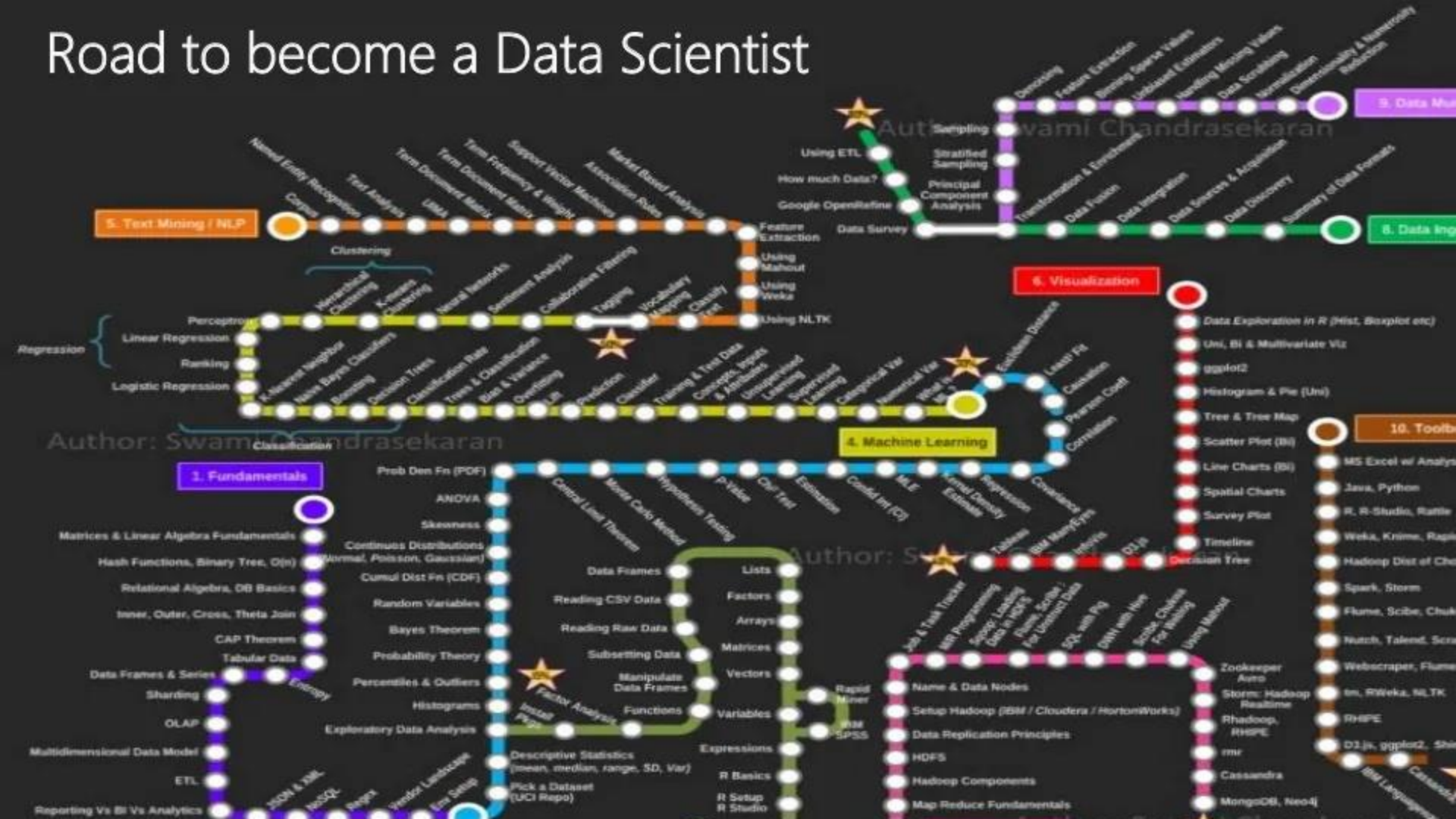
3. Big Data is a new field that is constantly growing and evolving.

IMPORTANCE OF DATA SCIENCE

4. Its findings and results can be applied to almost any sector like travel, healthcare and education among others.

5. Data science is accessible to almost all sectors.

Road to become a Data Scientist



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