

Welcome to Sapienza Data Science

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Who am I?

- Associate Professor in computer engineering at Sapienza
- Studied in Greece, USA
- Worked in the US for a bit, then came to Sapienza
- Works on algorithms, data analysis, data science
 - Search engines, social networks, recommender systems, misinformation, biology, finance, medicine, ...
- Helped create the Data Science master in Sapienza

Who are you?

What is Data Science?

Boh...

What is Data Science?



What is Data Science?

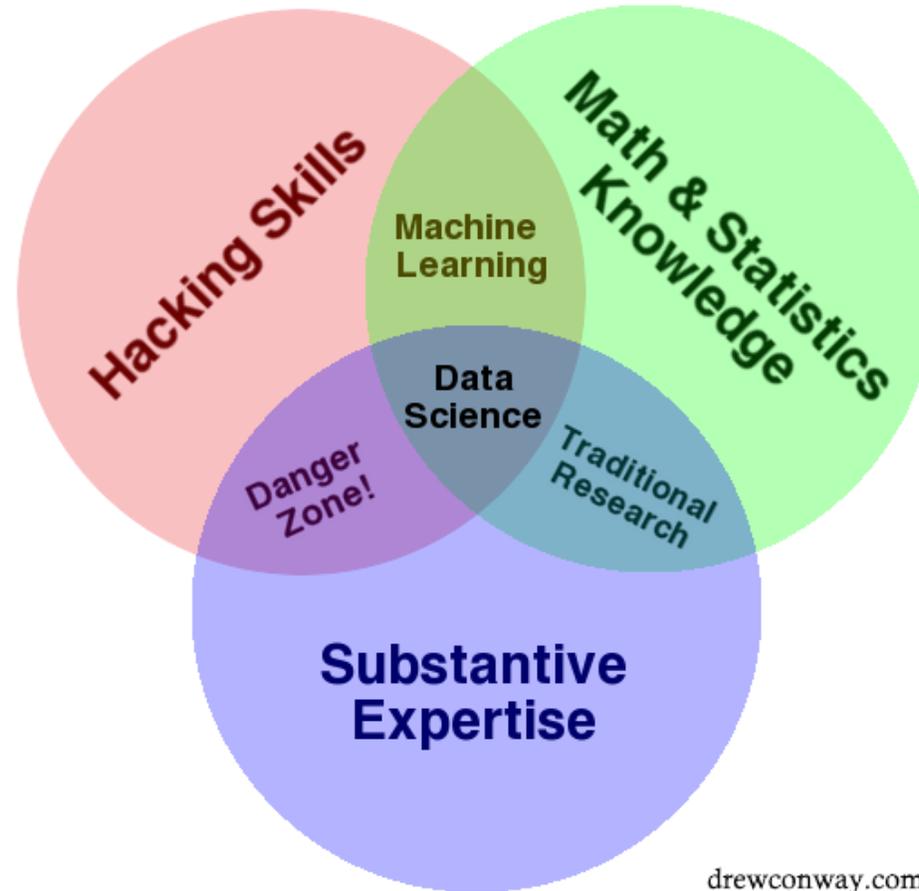
From Wikipedia:

Data science is an interdisciplinary field that uses scientific methods, processes, algorithms and systems to extract knowledge and insights from data in various forms, both structured and unstructured, similar to data mining.

Data science is a "concept to unify statistics, data analysis, machine learning and their related methods" in order to "understand and analyze actual phenomena" with data. It employs techniques and theories drawn from many fields within the context of mathematics, statistics, information science, and computer science.

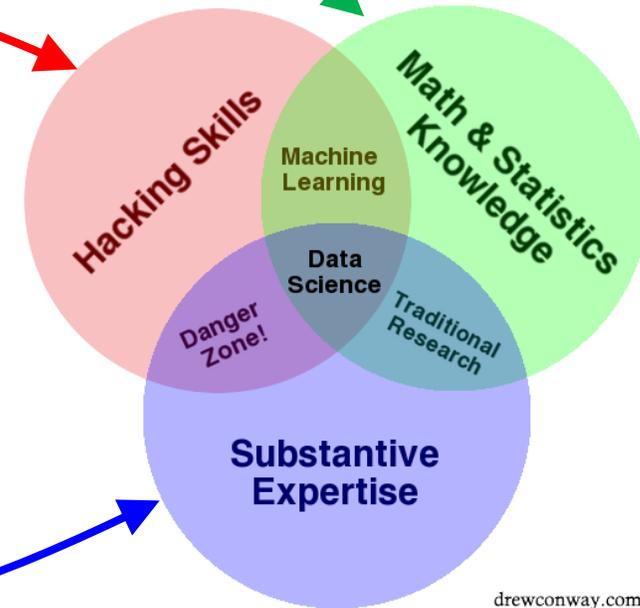
Turing award winner Jim Gray imagined data science as a "fourth paradigm" of science (empirical, theoretical, computational and now data-driven) and asserted that "everything about science is changing because of the impact of information technology" and the data deluge.

What is Data Science?



Programs in Data Science

- In the last 10 years, almost all the large Universities in the world created programs in Data Science
- Provide education that combines
 - Computer science/engineering
 - Math & Statistics
 - Domain knowledge



Applications

Applications in a lot of areas:

Computer science (All kinds of startups)

Biology

Epidemiology (Predizione)

Medicine

Social sciences (Online experiments)

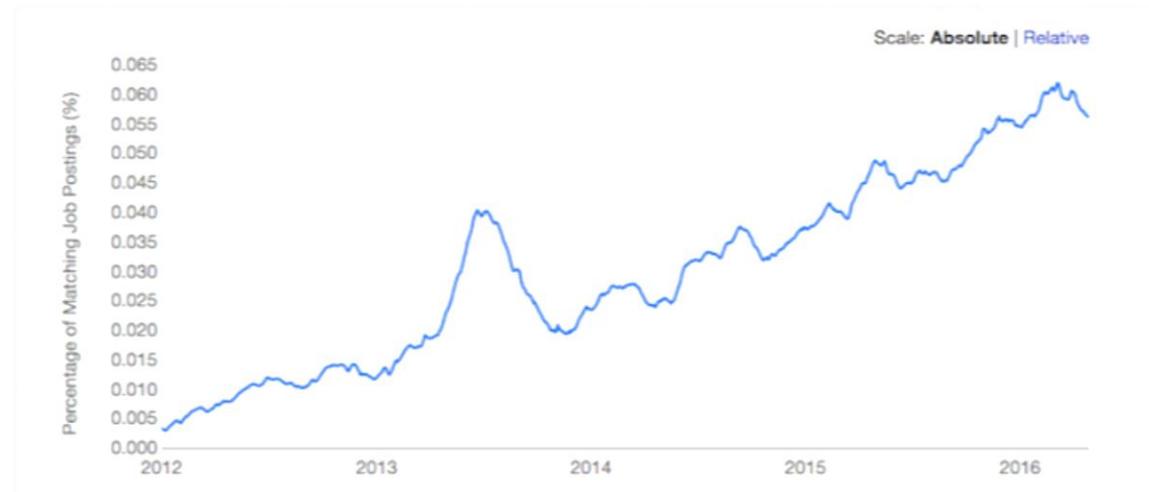
Politics (Obama)

...

Laurea magistrale in Data Science

The job of bid-data analyst is requested for more than 10 years in startups, public agencies and many copanies in Fortune 500.

Up to 800 K requests for job in Europe in the area of big data.



Data Science programs in Italy

In 2015, 3 Data Science master (laurea magistrale) programs started in Italy:

- Ca'Foscari
- Sapienza
- U. Torino

More opened since then:

- U. Bologna
- U. Firenze
- U. Milano-Bicocca
- U. Padova
- U. Pisa
- U. Trieste + U. Udine (+ SISSA + ICTP)



Data Science @Sapienza

Highlights

- Laurea magistrale in Data Science
- 2 years
- After the triennale
- Founded in 2015
- First graduates in October 2017
- Taught in english



Alla Sapienza arrivano i primi laureati in Data Science d'Italia



Data Science @Sapienza

Features

- Multidisciplinary: 4 departments involved:
 - Informatica
 - Ingegneria informatica, automatica e gestionale
 - Ingegneria dell'Informazione, elettronica e telecomunicazioni
 - Scienze statistiche
- Collaboration with the Industry
 - Stages, internships, final project
- Applied from day 1
- Accepts students from various disciplines
- About 1/3 of the students are nonitalians



Industrial liaison program

ISTAT

Engineering

Accenture

IBM

EY

Poste Italiane

Immobiliare.it

Teradata

SAS

NTT DATA

Oracle

Almawave

Telecom

Microsoft

UNICREDIT

ESA/Esrin

Splunk

Vodafone

CINECA

Sky

KPMG

LAIT Lazio

EMC2

Immobiliare

5M Informatica

Vitrociset



Program structure

4 compulsory courses

1st year

Give the basics of DS to everyone

Computer science

Algorithms
Programming
Network theory

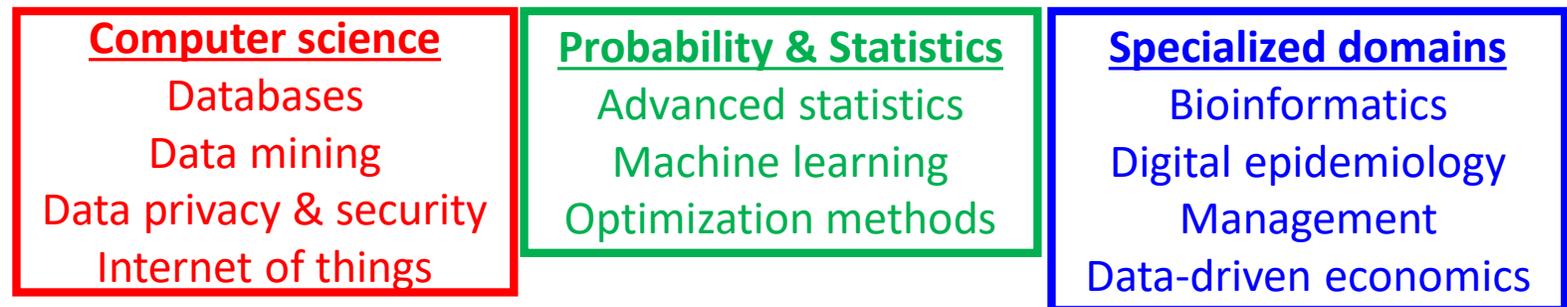
Probability & Statistics

Hypothesis testing
Prediction

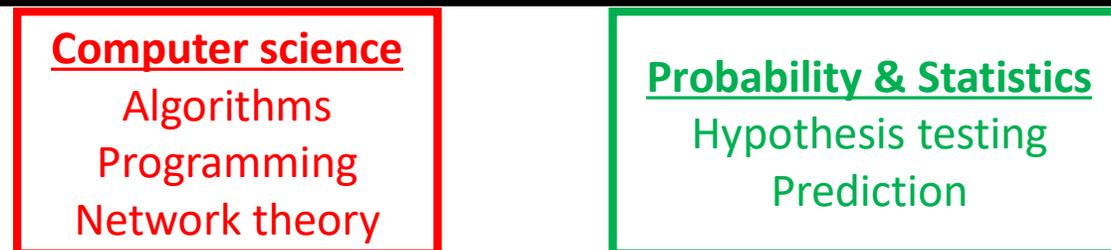


Program structure

7 optional courses
Some courses from each category
Specialize in what interests you



4 compulsory courses
1st year
Give the basics of DS to everyone





Program structure

Practical experience

Training camps (Google, IBM, SAS)
Stages and internships (Italy, EU, USA)
Final thesis

Computer science

Databases
Data mining
Data privacy & security
Internet of things

Probability & Statistics

Advanced statistics
Machine learning
Optimization methods

Specialized domains

Bioinformatics
Digital epidemiology
Management
Data-driven economics

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Algorithms
Programming
Network theory

Probability & Statistics

Hypothesis testing
Prediction

4 compulsory courses
1st year
Give the basics of DS to everyone

2017 students

