



# Introduction to Data Science



# Hello!

## I am Agil Haykal



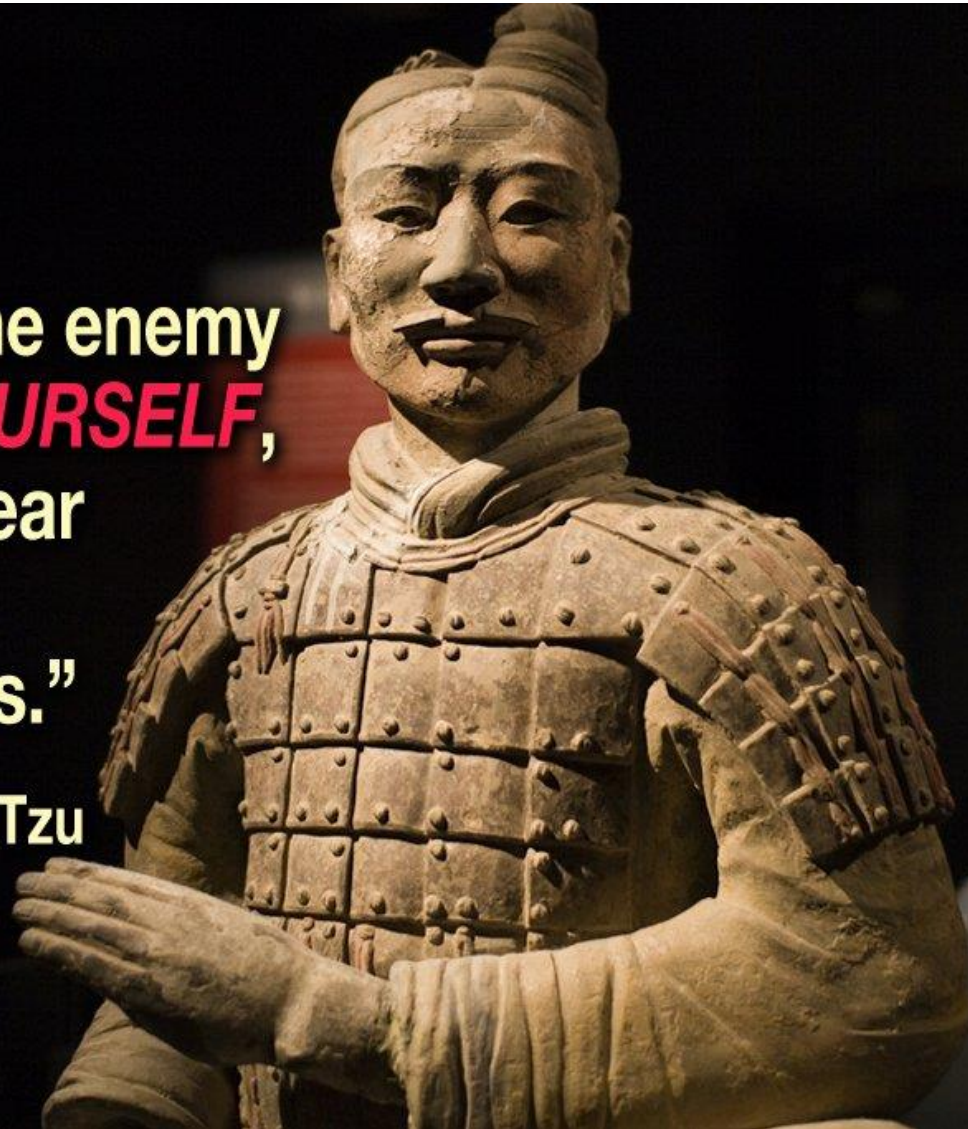
*I am a Data expert with extensive experience in multiple industries such as marketplace, insurance, banking, general taxation, consulting, and training.*

*In total, I trained more than 250 data scientists, engineers, and analysts.*

“If you know the enemy  
and **KNOW YOURSELF**,  
you need not fear  
the result of a  
hundred battles.”

~ Sun Tzu

PersonalExcellence.co





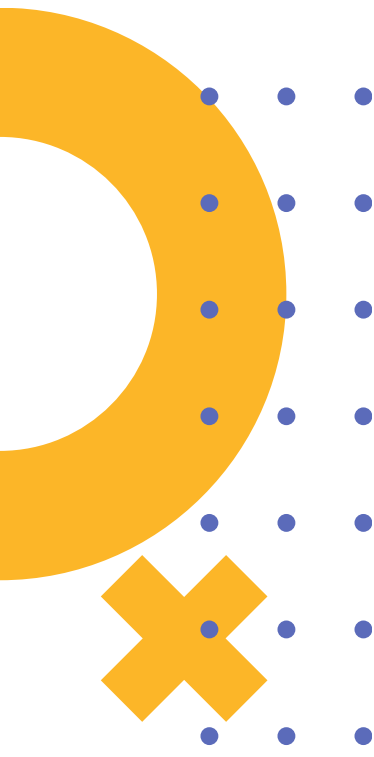
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## What will We Learn Today?

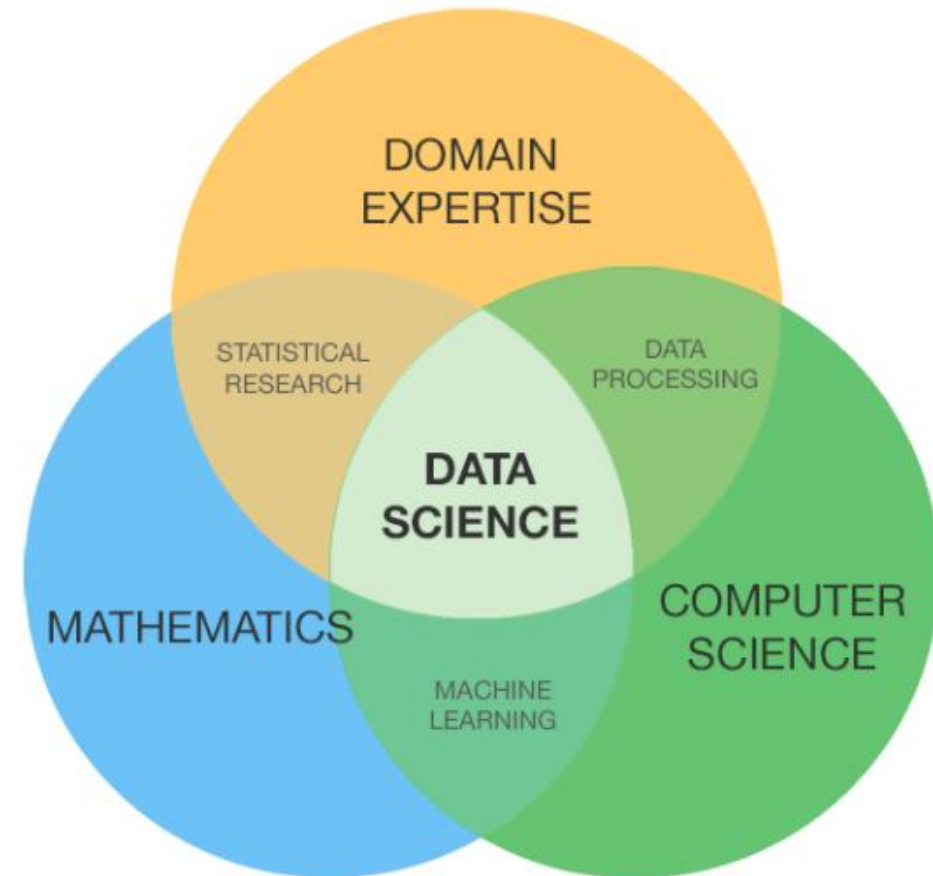
1. What is Data Science?
2. Why Data Science matter?
3. Who works in Data Science Field?
4. What skills Data Scientist needs?
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8. Data Science Success Story?



# What is Data Science?



**Data science** is the field of study that combines domain expertise, computer science, and knowledge of mathematics and statistics to extract meaningful insights from data.



**Domain expertise can work by itself,  
why should it need Data Science?**

**Mathematics & Stats is enough, right?**

# **Why Data Science matter?**

**Computer Science is strong enough  
without those things.**





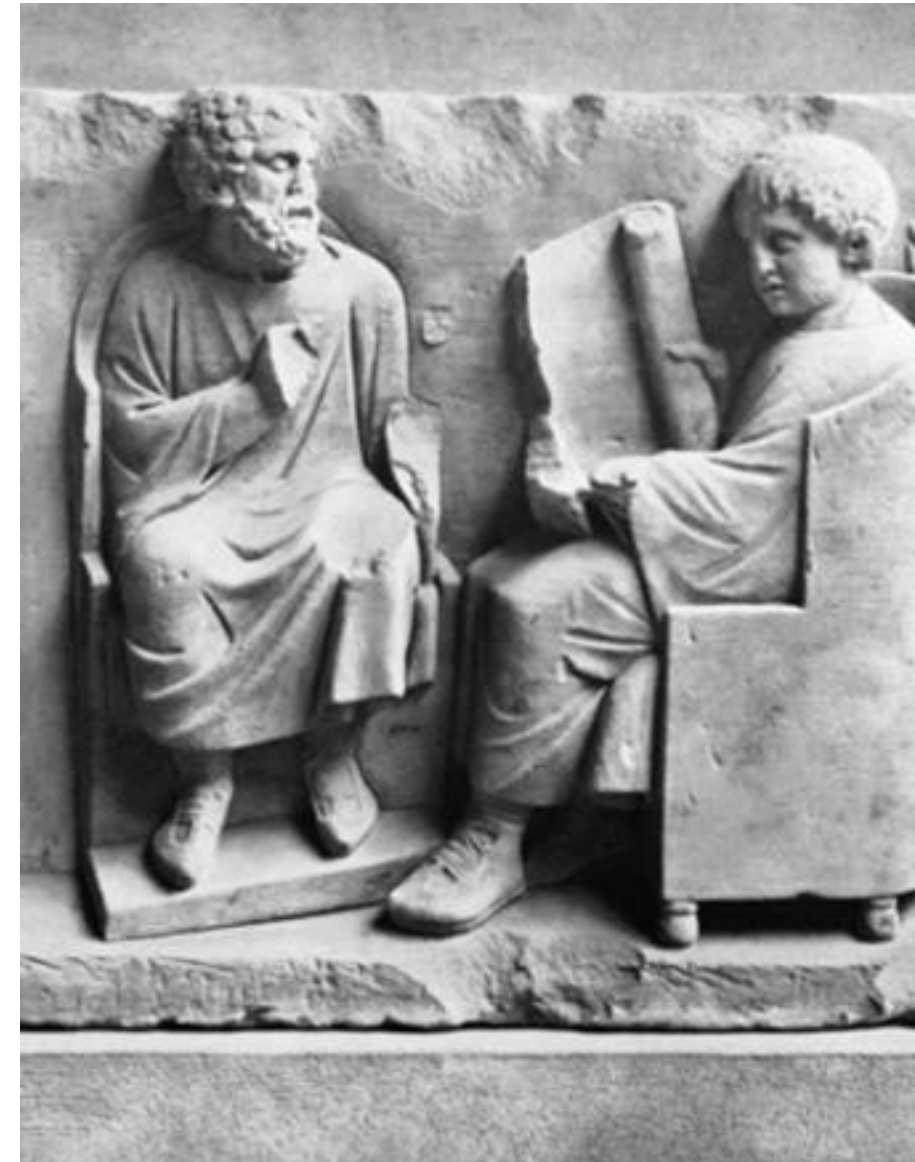
# 1. Data represent facts

**DATA** (plural)

Datum (singular)

A fact known from direct observation

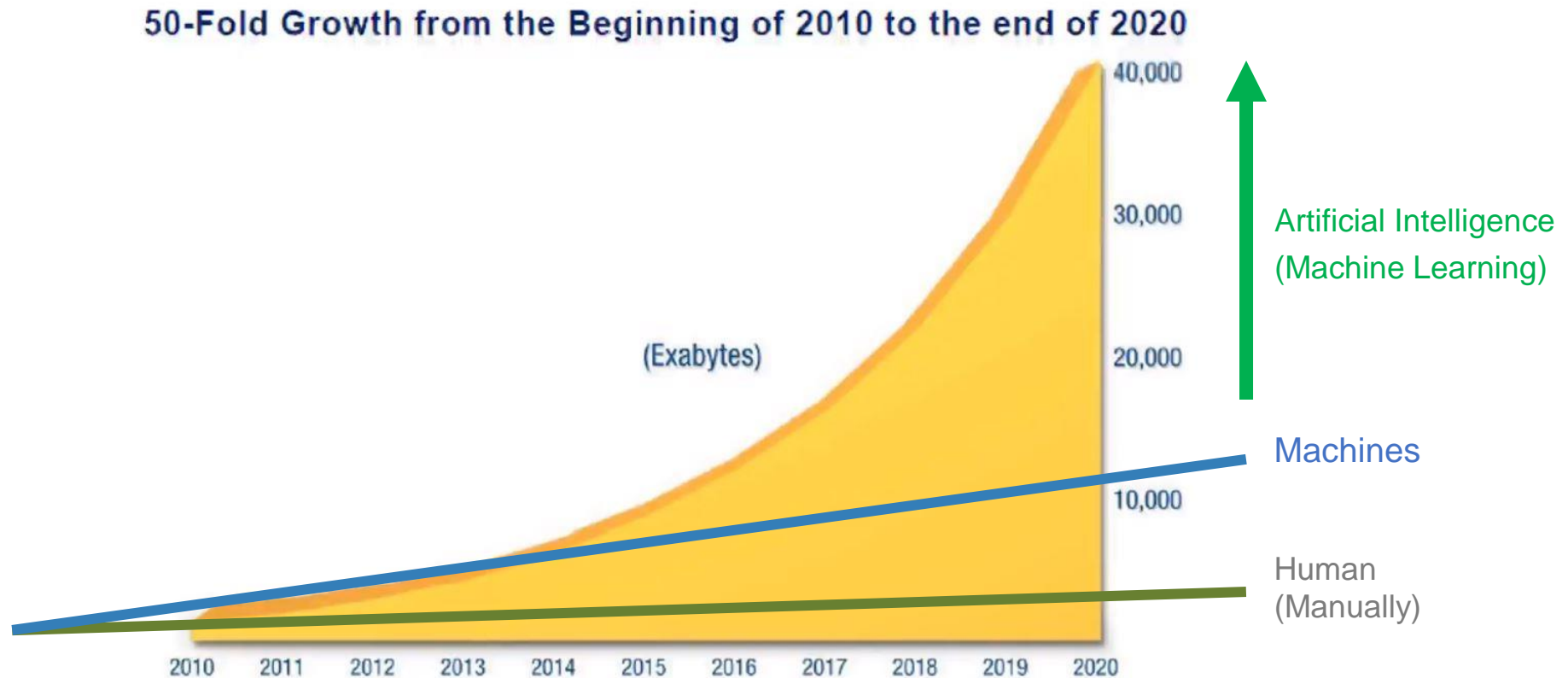
A measurement of something on a scale  
understood by both the recorder and the reader







## 2. Data keeps growing



Source: IDC's Digital Universe Study, sponsored by EMC, December 2012

**1 exabytes = 1.000.000.000 GB**



## 3. Must be Valuable

**Resource**

(money, time, power)

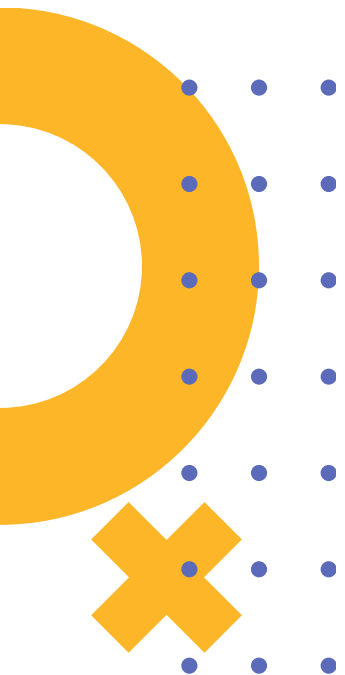
**Experience**

(tiktok filters, content  
recommendation, etc)

**Environment**

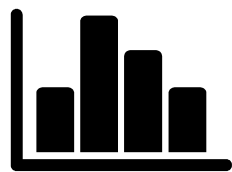
(community, society, animal,  
etc)

# Who works in Data Science field?

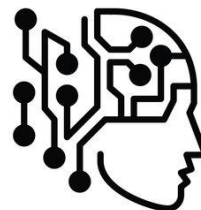




# Data Science Talents



Business Intelligence



Data Scientist

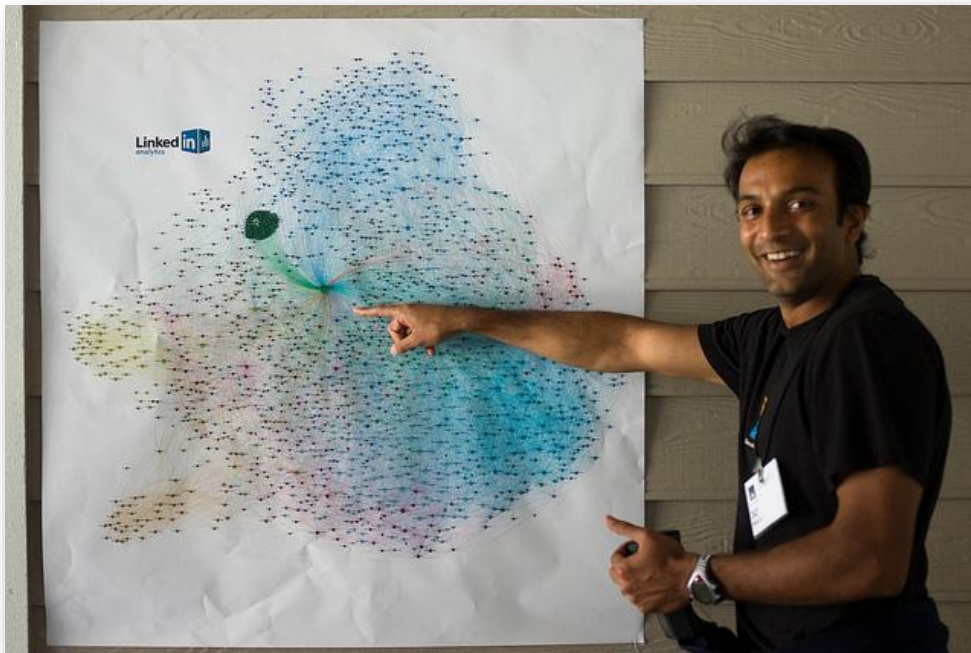


Data Analyst





# The guy who named Data Scientist



DJ Patil, former LinkedIn and White House Data Scientist. Together with Jeff H (former Facebook) invent the term Data Scientist in 2011

“A Data Scientist is that a **unique** blend of skills that can both **unlock** the insights of data and **tell** a fantastic story via the data”

-- DJ Patil --

# Types of Data Scientist

Consultant

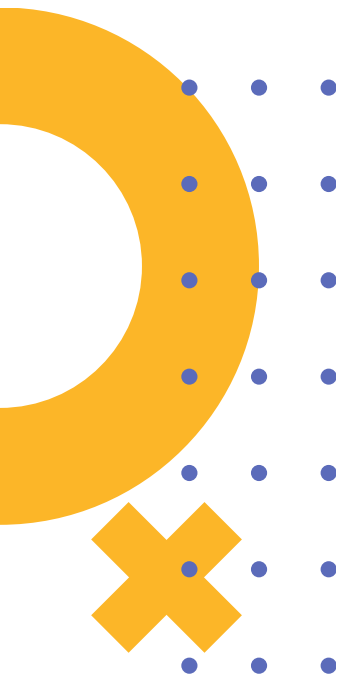


Developer



Researcher

# What skills Data Scientist needs?

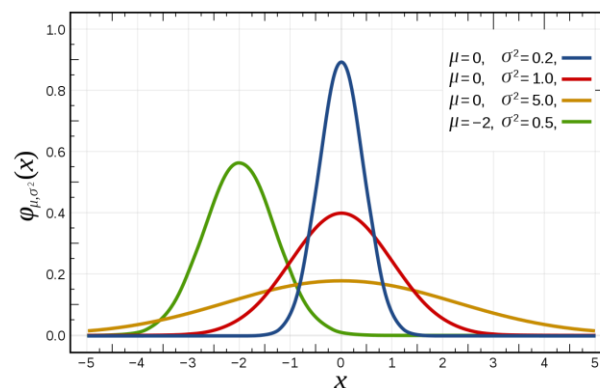




## Fundamental Skills



Programming  
Language



Math and Stats



Problem Solving



Machine Learning



Database

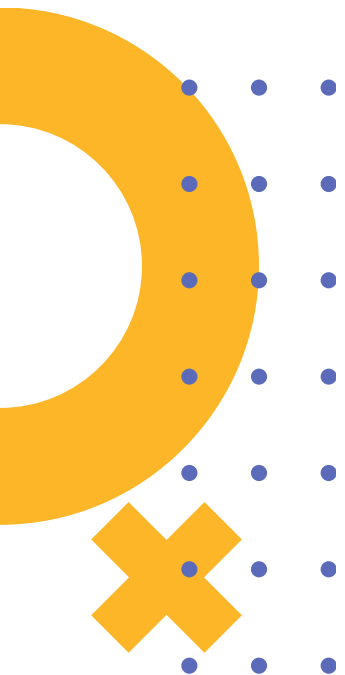


Data Visualization



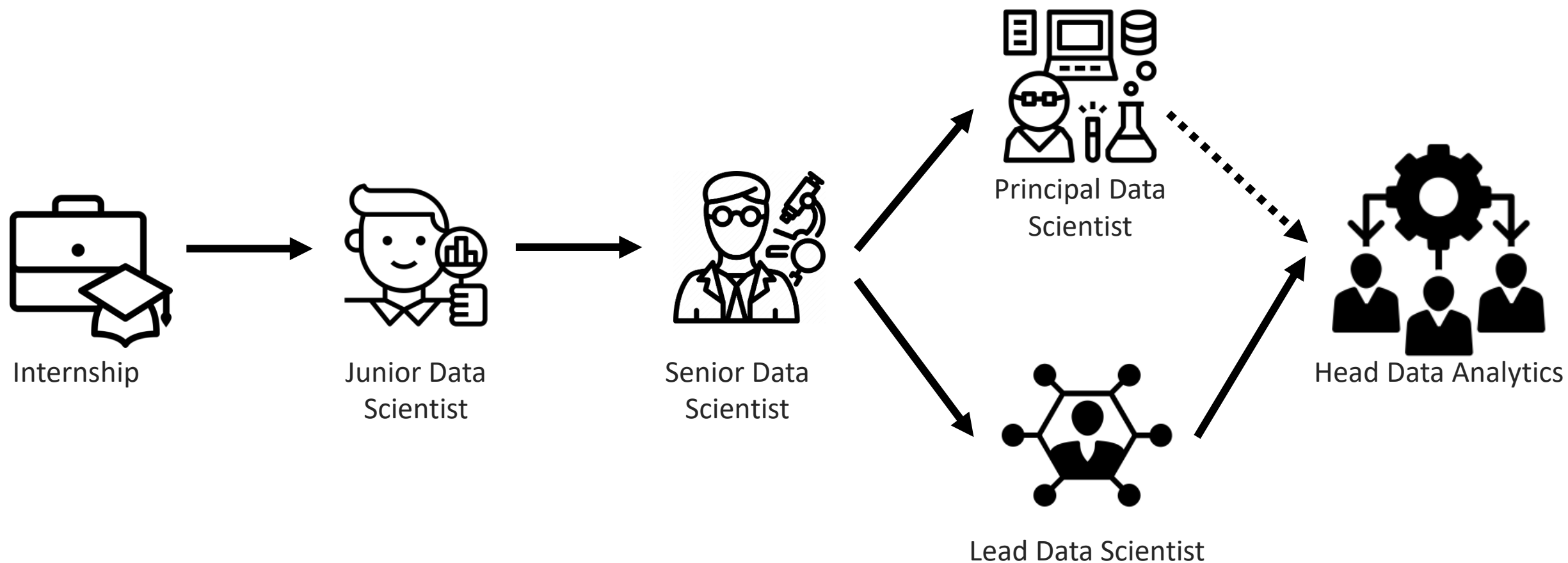
Communication Skill

# How about Data Scientist career path?





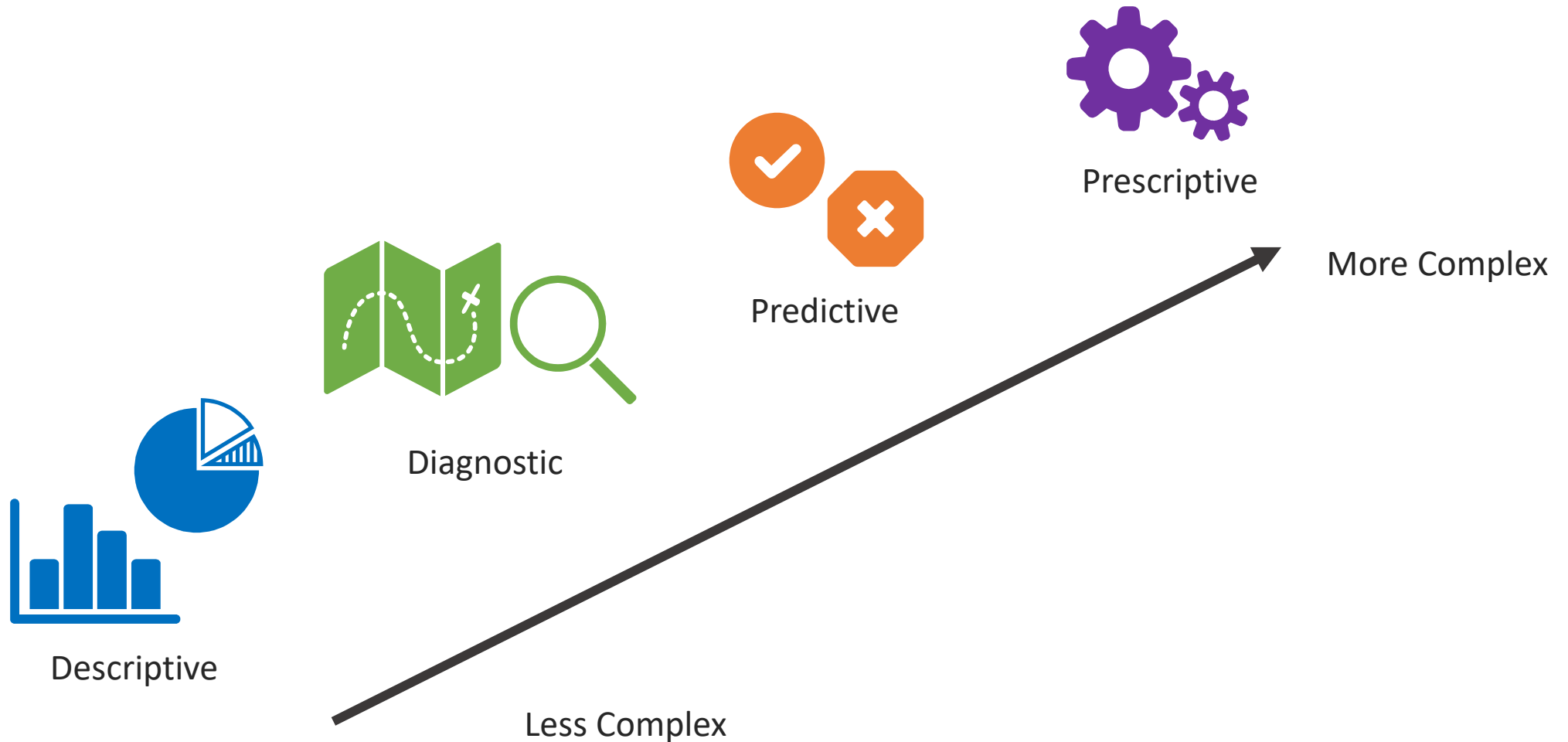
# Data Scientist Career Path



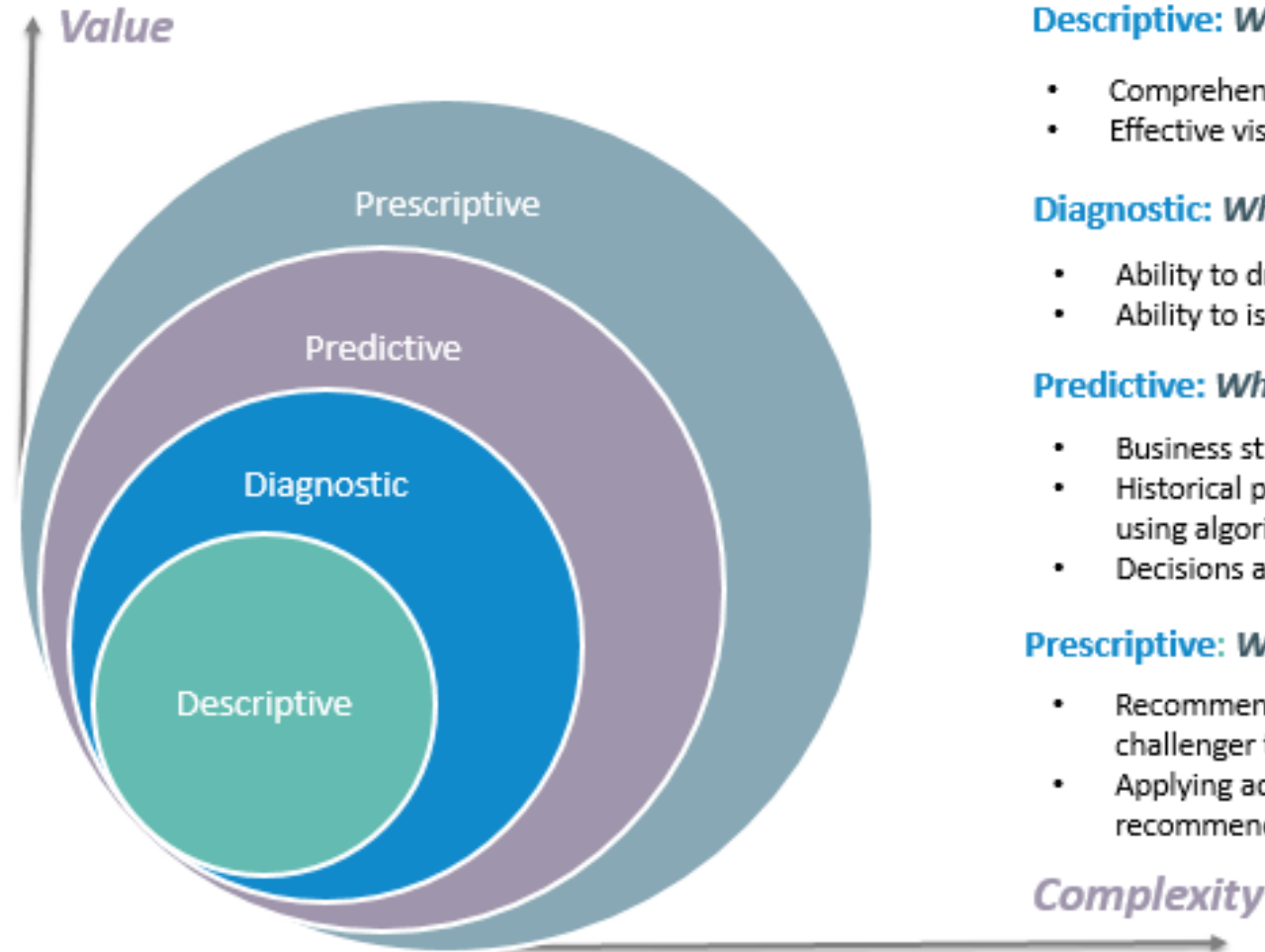
# What are Data Science products?



## Data Science Products



## 4 types of Data Analytics



### What is the data telling you?

#### **Descriptive:** *What's happening in my business?*

- Comprehensive, accurate and live data
- Effective visualisation

#### **Diagnostic:** *Why is it happening?*

- Ability to drill down to the root-cause
- Ability to isolate all confounding information

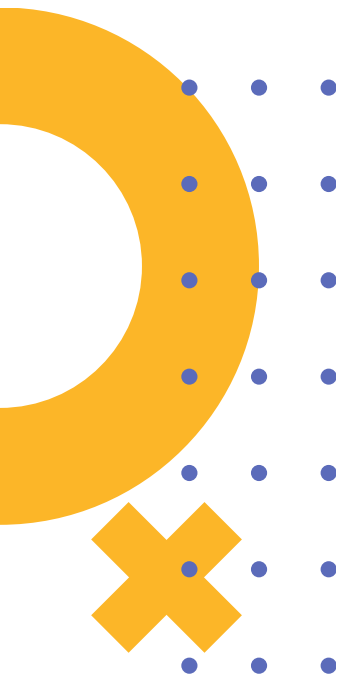
#### **Predictive:** *What's likely to happen?*

- Business strategies have remained fairly consistent over time
- Historical patterns being used to predict specific outcomes using algorithms
- Decisions are automated using algorithms and technology

#### **Prescriptive:** *What do I need to do?*

- Recommended actions and strategies based on champion / challenger testing strategy outcomes
- Applying advanced analytical techniques to make specific recommendations

# Data Scientist specialization path





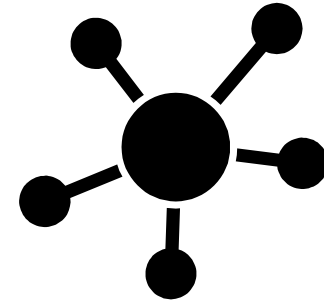
## Data Scientist Specialization Path

A/B

Statistics Testing



Predictive Modeling



Graph Analysis



Computer Vision



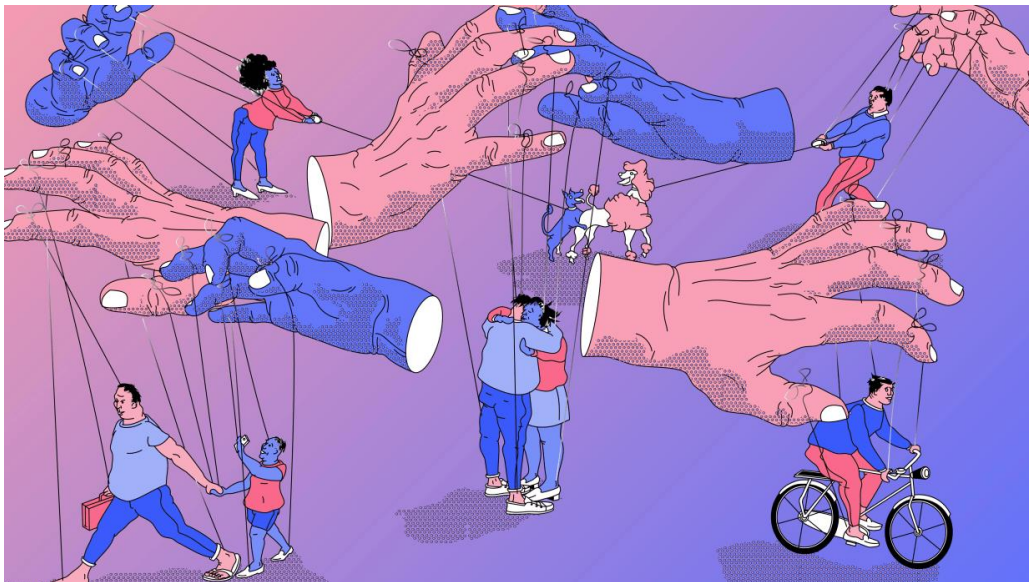
Natural Language  
Processing



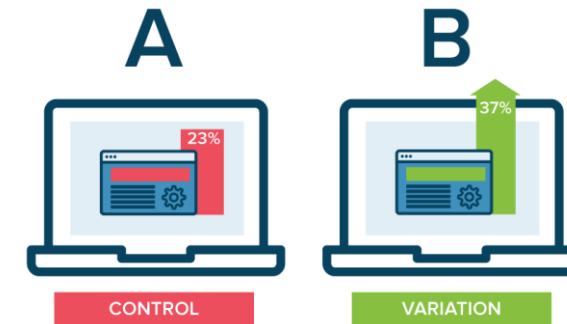
Recommendation  
System



# Statistics Testing



Simulation



50 % visitors  
see variation A



23%  
conversion

50 % visitors  
see variation B



11%  
conversion

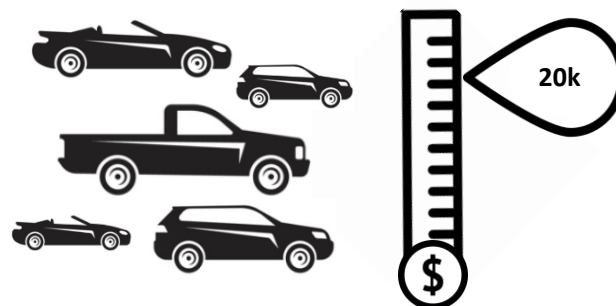
A/B testing



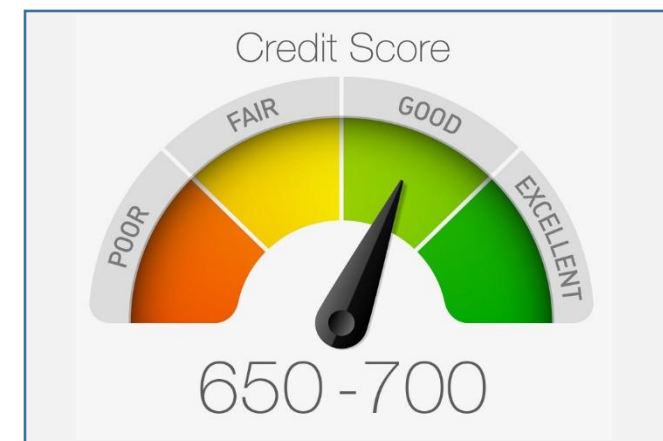
# Predictive Modeling



Churn Analysis



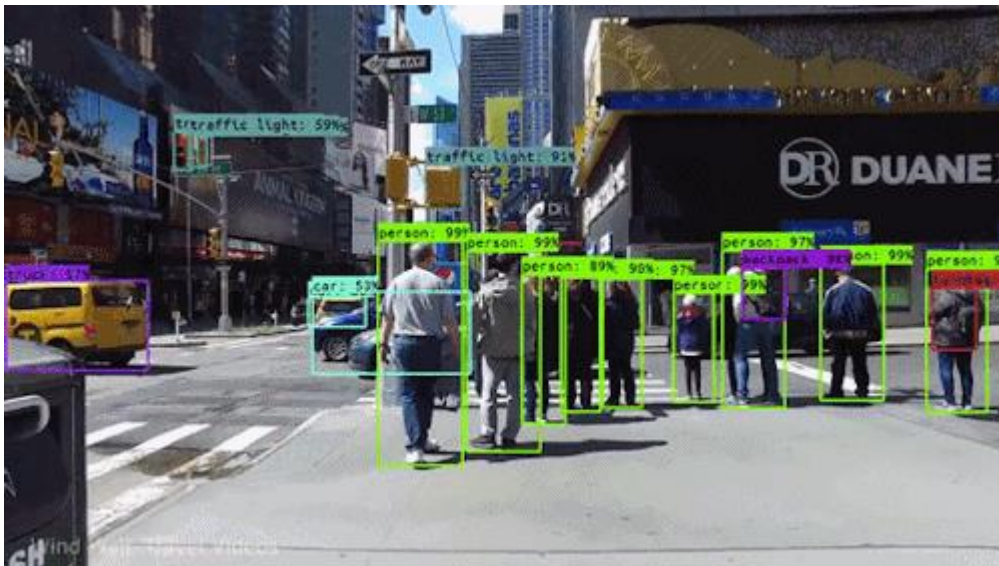
Price Prediction



Credit Scoring



# Computer Vision



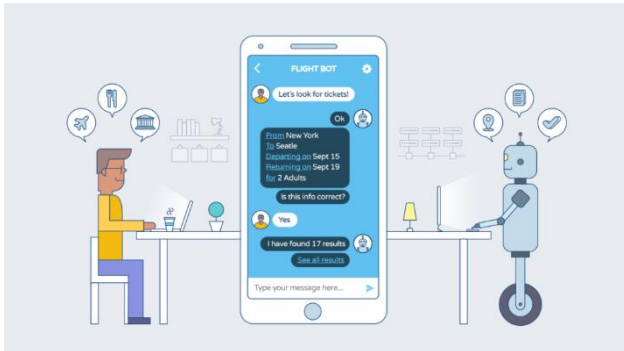
Object Detection



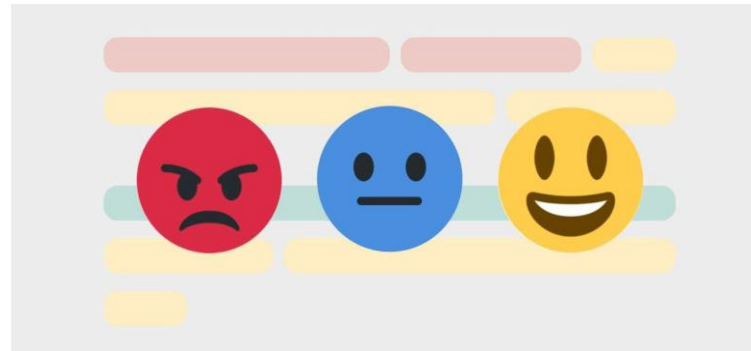
Sematic Segmentation



# Natural Language Processing



Chatbot



Sentiment Analysis



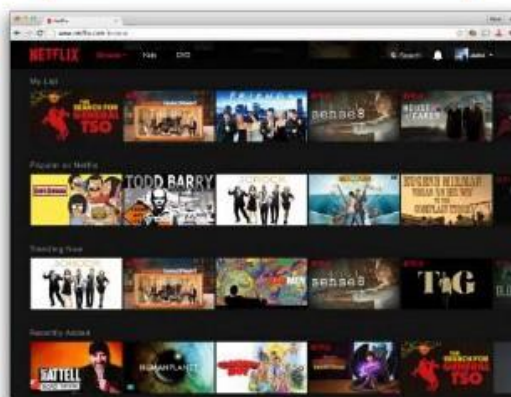
Voice Recognition





# Recommendation System

Everything is a Recommendation

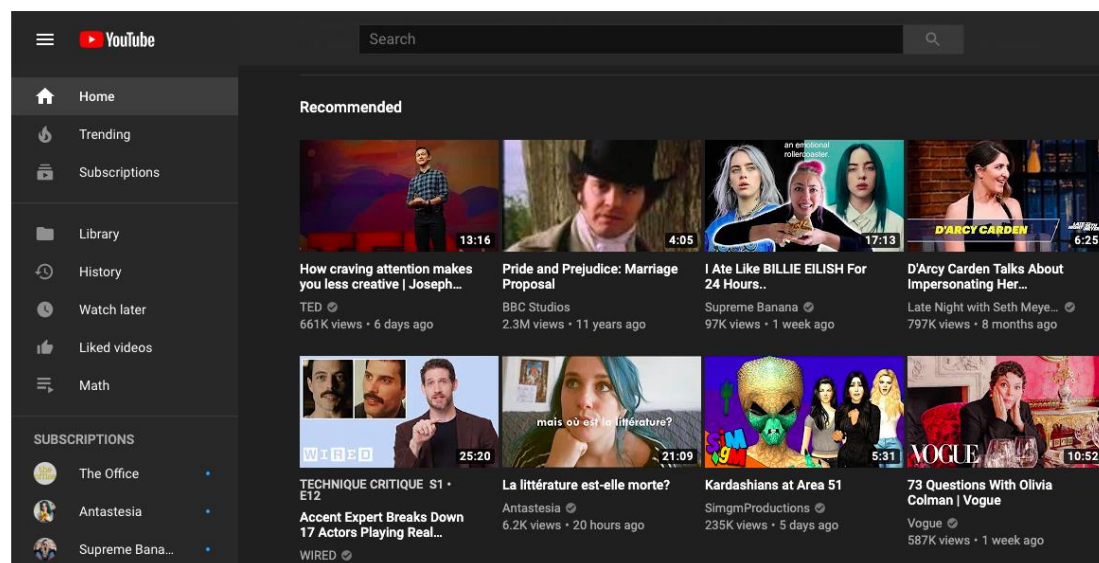


NETFLIX

Over 80% of what people watch comes from our recommendations

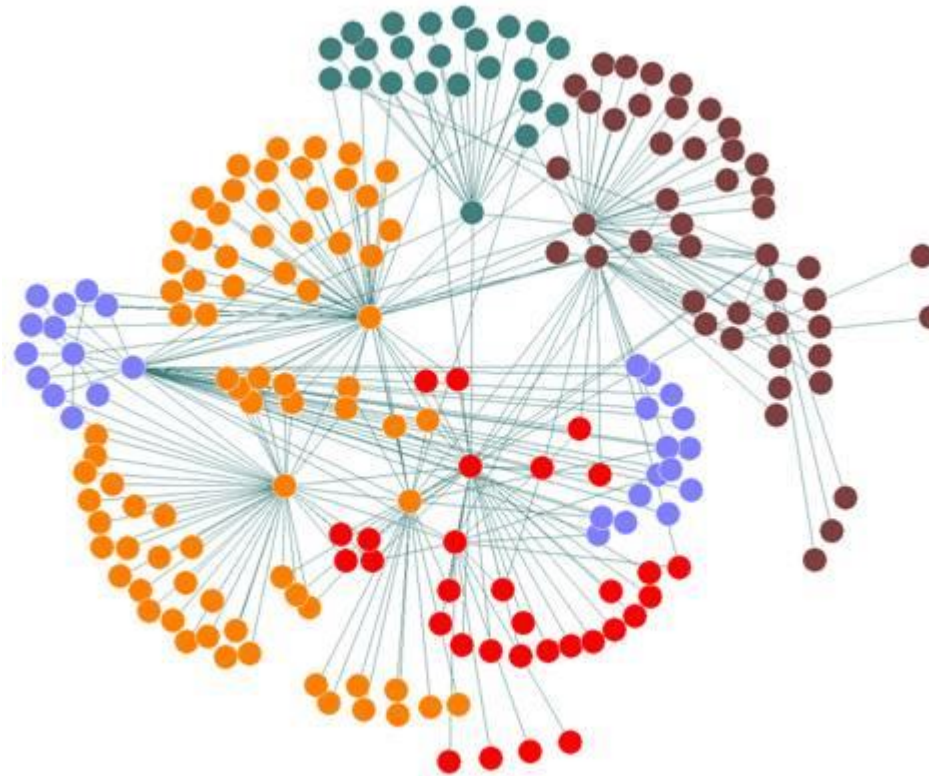
Recommendations are driven by **Machine Learning**

5



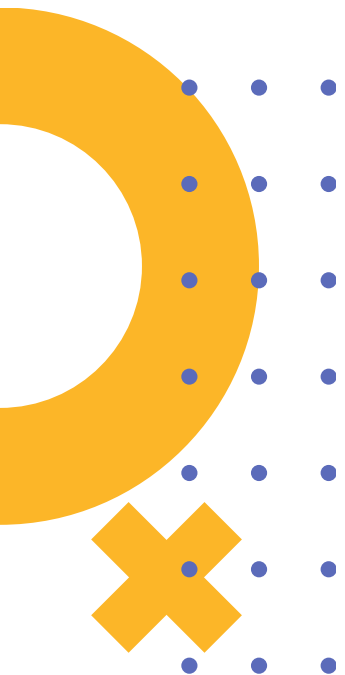


# Graph Analysis





# How Data Professional Works?



## Ideation / Business Understanding



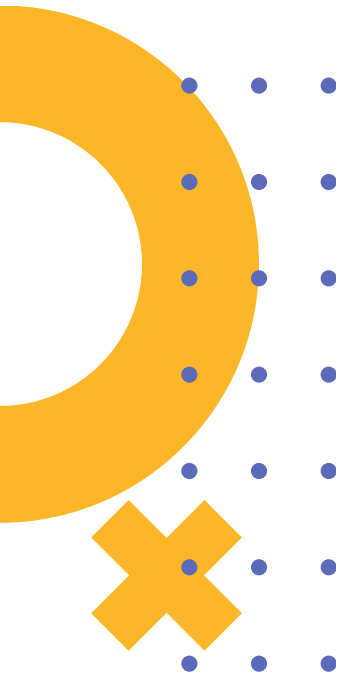
## Project Handling



## Project Result Deployment / Presentation



# Data Science Success Story?



# How Netflix used big data and analytics to generate billions



Netflix is successful thanks to big data and analytics.

# Amazon's recommendation secret

BY **JP MANGALINDAN**

July 30, 2012 10:09 PM GMT+7

FORTUNE — When Amazon recommends a product on its site, it is clearly not a coincidence.

At root, the retail giant's recommendation system is based on a number of simple elements: what a user has bought in the past, which items they have in their virtual shopping cart, items they've rated and liked, and what other





TECH

DATA

CULTURE

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DESIGN

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ALL

WE'RE HIRING!

# Fantastic drivers and how to find them

How we built an algorithm that could identify and differentiate clusters as intuitively as the human eye



Ishita Mathur

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**Thank  
YOU**

