

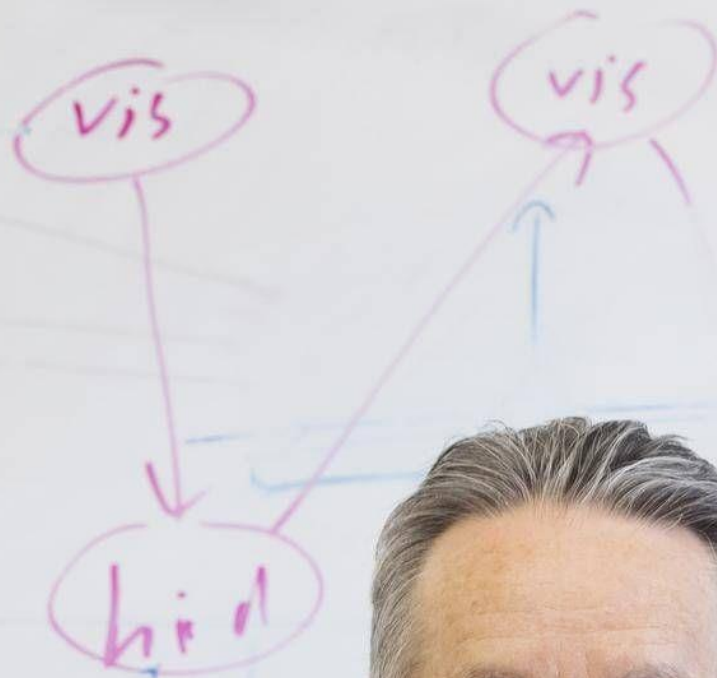
DS L&L Series Lesson 1  
Dec 19, 2018 &  
Jan 3, 2019

# What is Data Science?

# 1. History

---

T-Sne for shopping



$$a = \frac{b}{2}$$
$$(a-b)$$

$$\left(\log \frac{a}{\cdot}\right)^2$$

granity

320 → 1

440 → 0



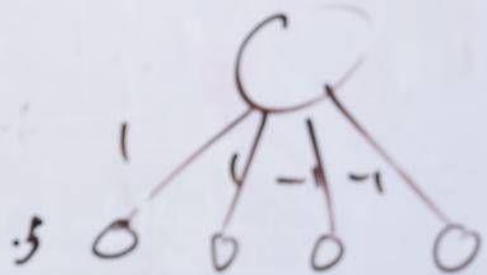
cos-si



$\|h - (h + \text{diff in recon})\|$

$$\|h - f_2^{-1}(\text{target})\|^2$$

na  
tar



1-9

c :A

**SORRY, YOU CAN'T SIT WITH US**



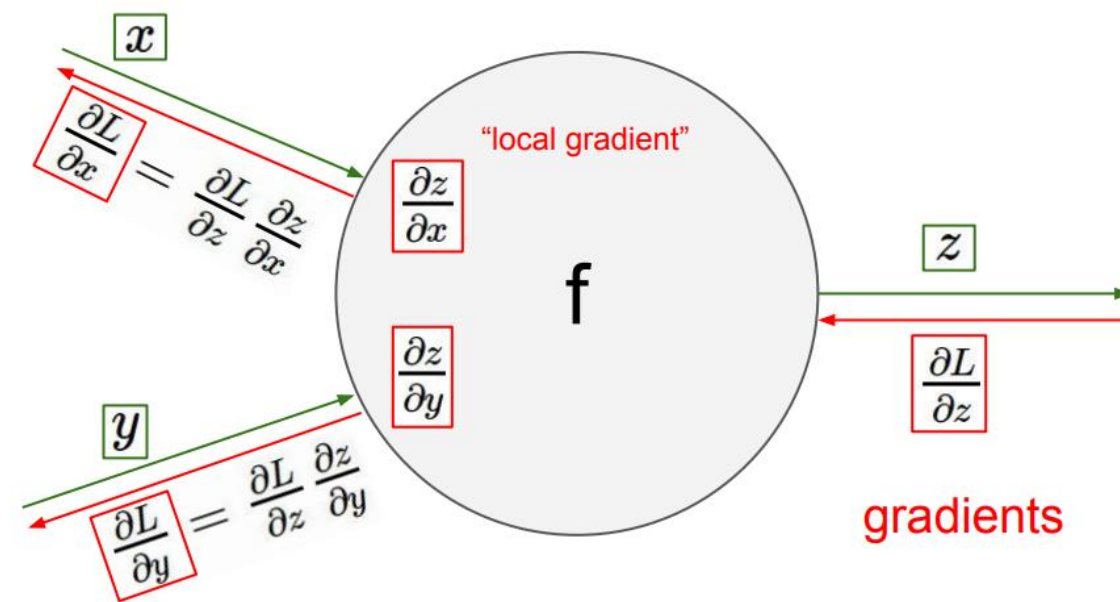
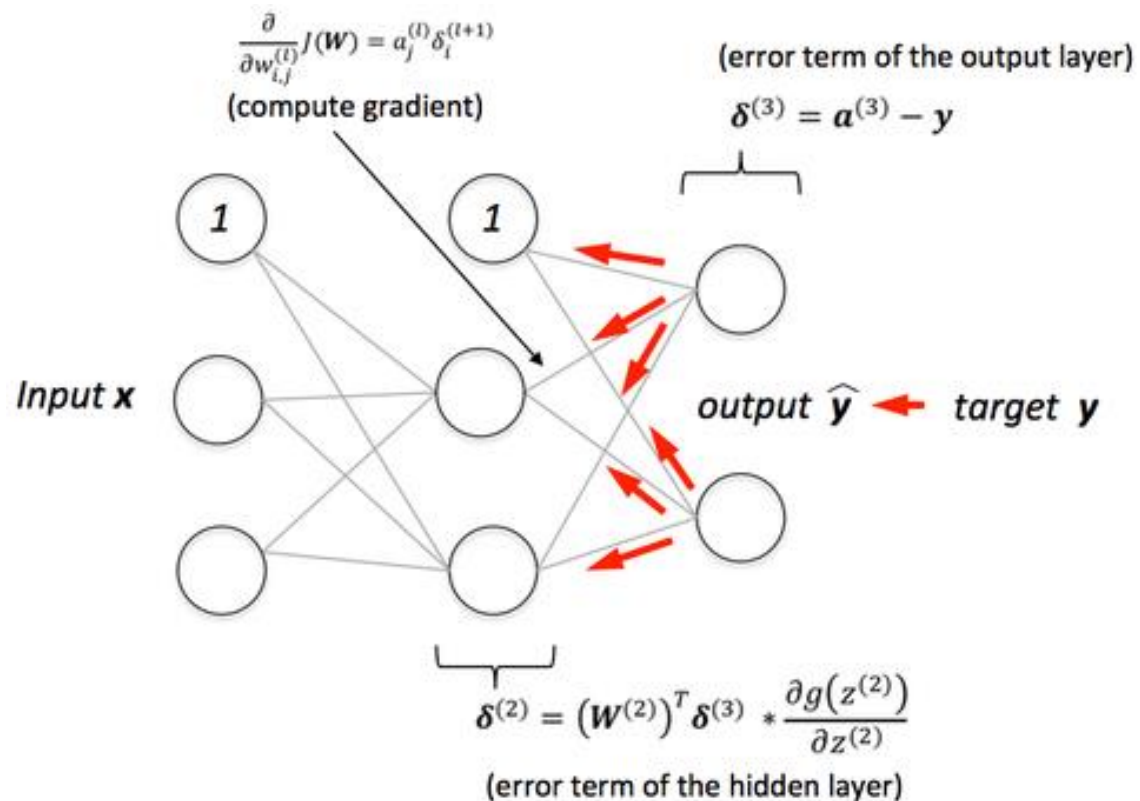


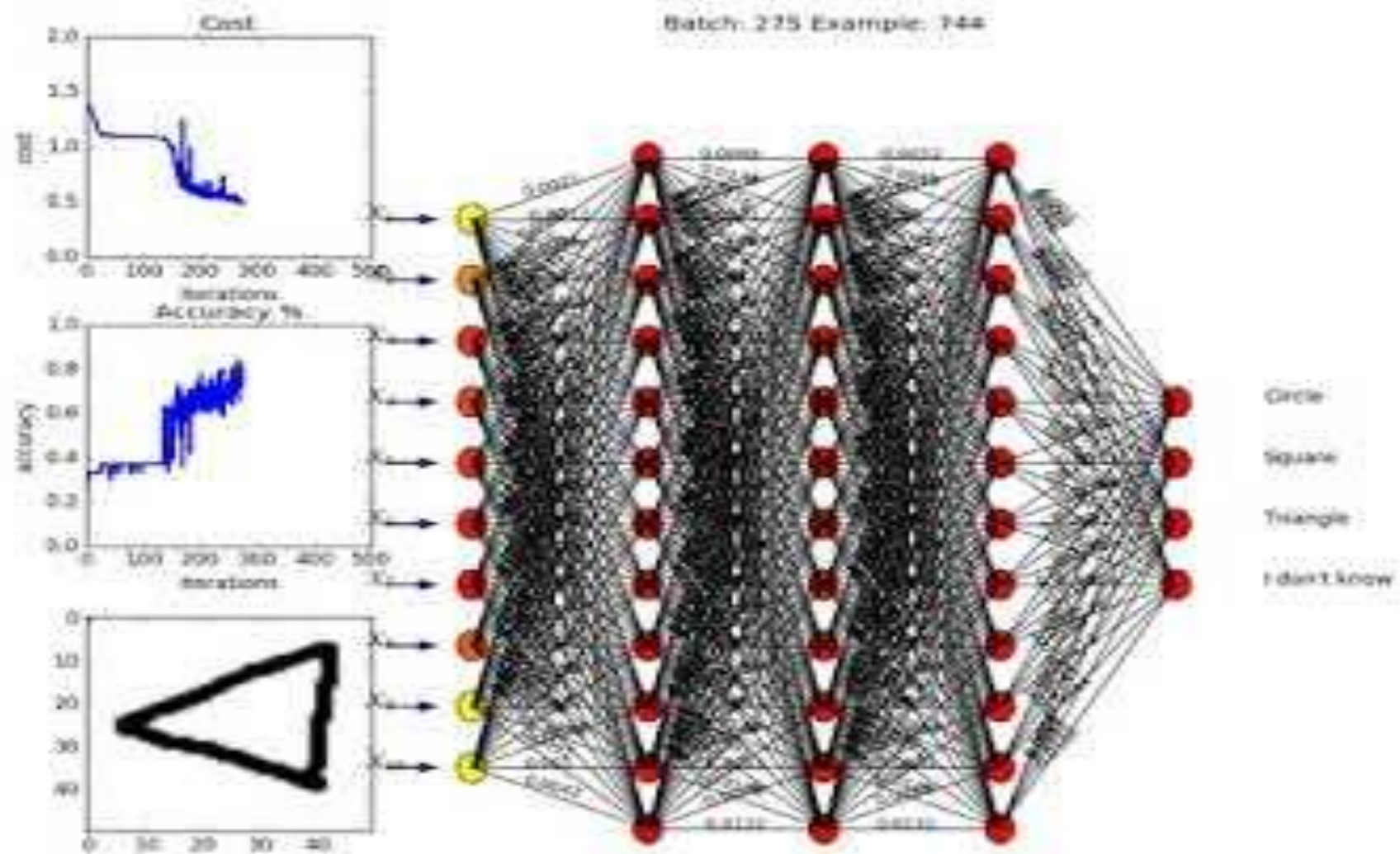


University of Mary College  
Baltimore, Maryland  
A. BOLIN ARCHT.



# Backpropagation









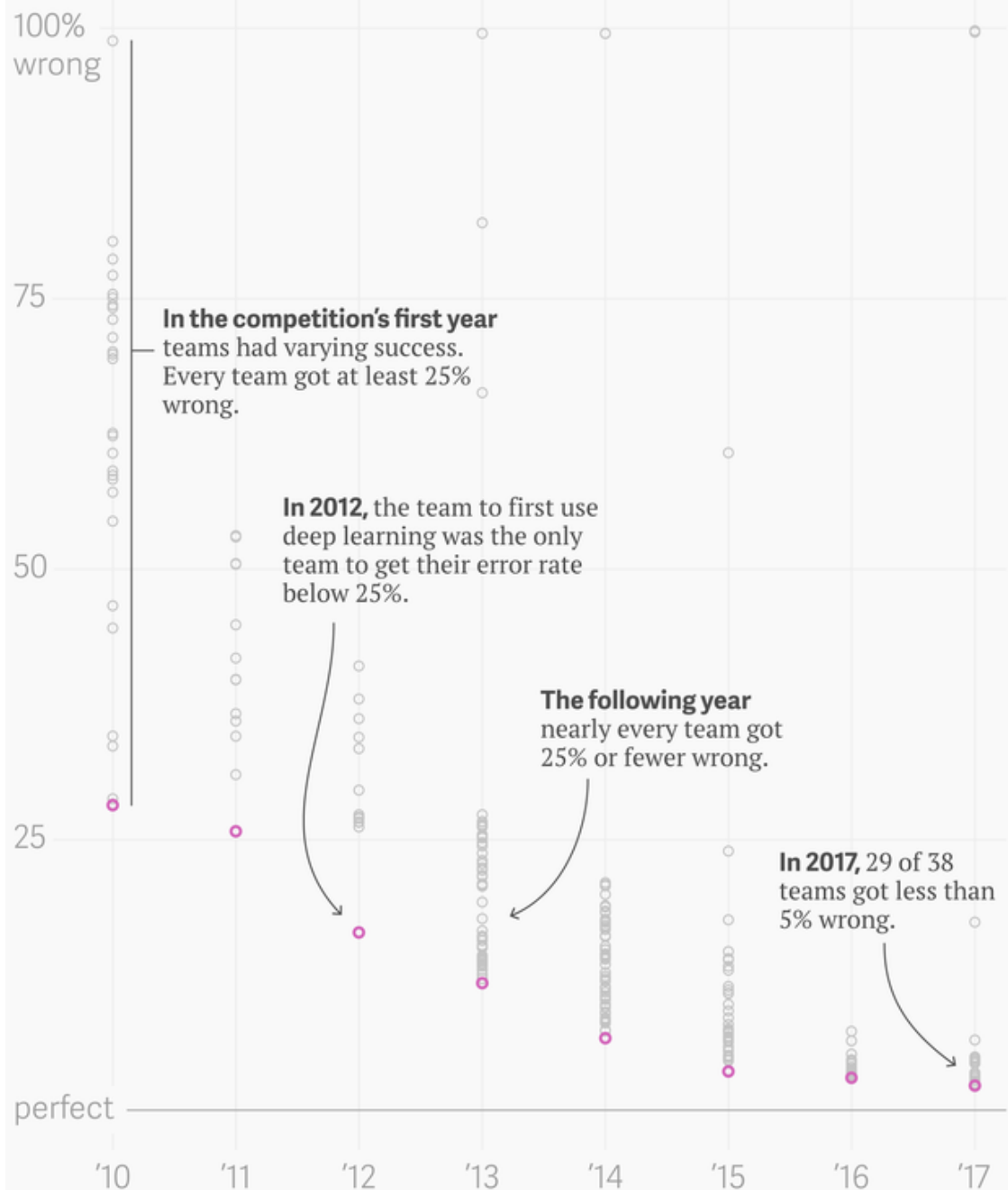
mammal → placental → carnivore → canine → dog → working dog → husky



vehicle → craft → watercraft → sailing vessel → sailboat → trimaran

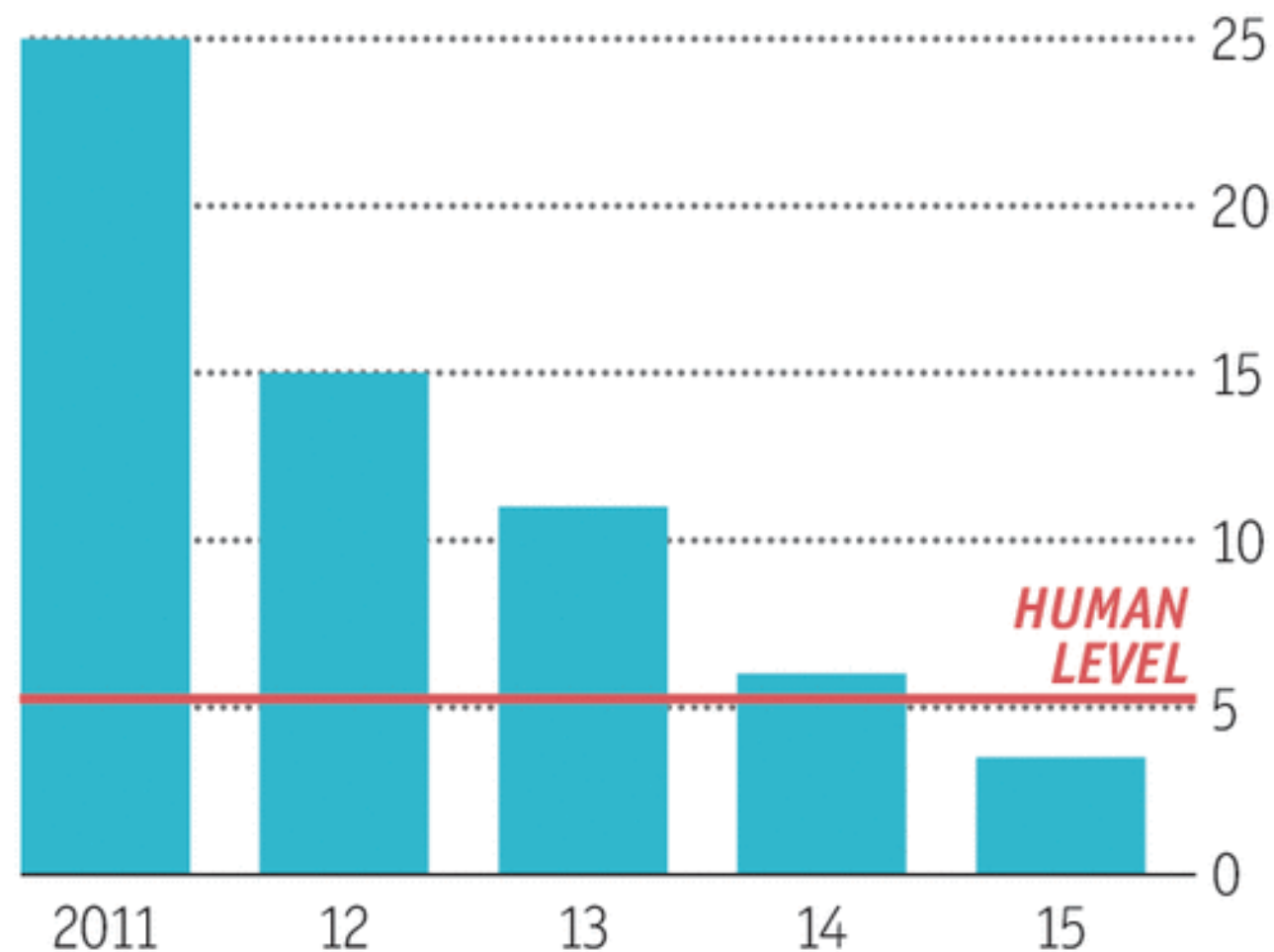


ImageNet Large Scale Visual Recognition Challenge results



## Ever cleverer

Error rates on ImageNet Visual Recognition Challenge, %



Sources: ImageNet; Stanford Vision Lab







## 2. What is Data Science/ML/AI?

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## Dictionary



# da·ta sci·en·tist

*noun*

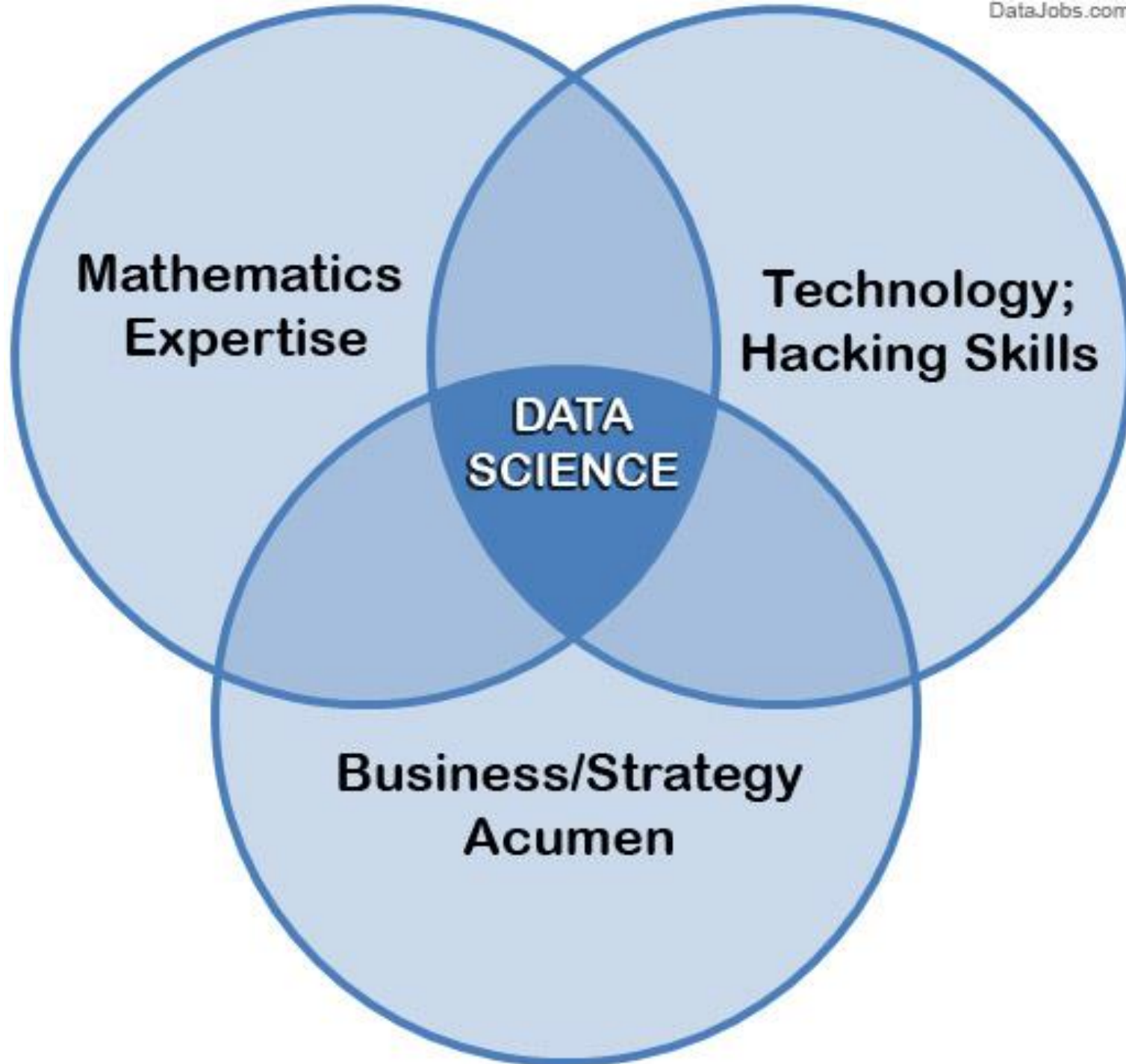
a person employed to analyze and interpret complex digital data, such as the usage statistics of a website, especially in order to assist a business in its decision-making.

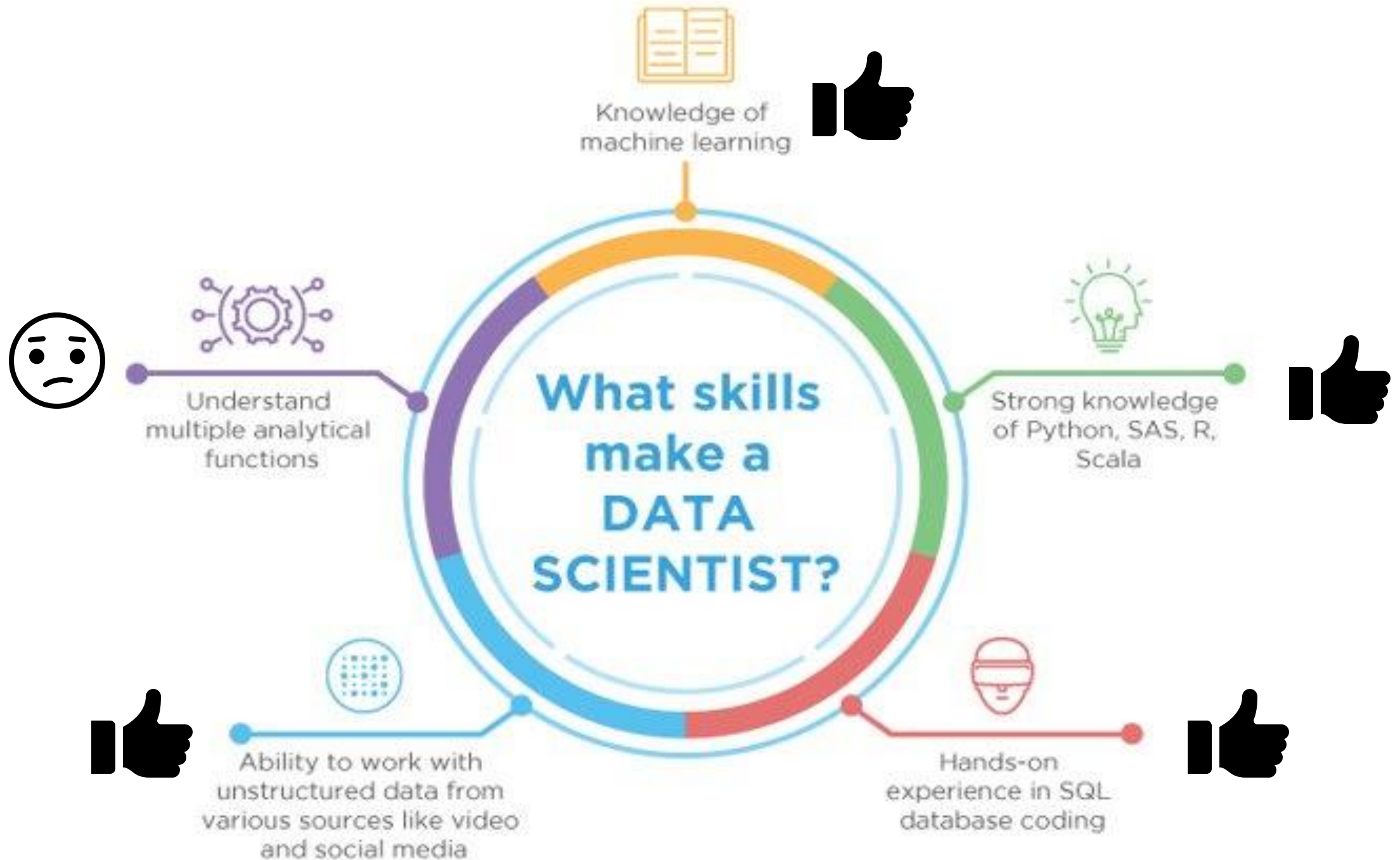
"Silicon Valley technology companies are hiring data scientists to help them glean insights from the terabytes of data that they collect everyday"



Translations, word origin and more definitions









# Data Science Workflow



Read in data



Clean missing values, outliers



Explore: look for interesting information, statistics



Build a model. Depends on business value



Validate the model



# Machine learning



Field of study

Machine learning is the study of algorithms and mathematical models that computer systems use to progressively improve their performance on a specific task. [Wikipedia](#)

# Two Types of Models



Mathematical:

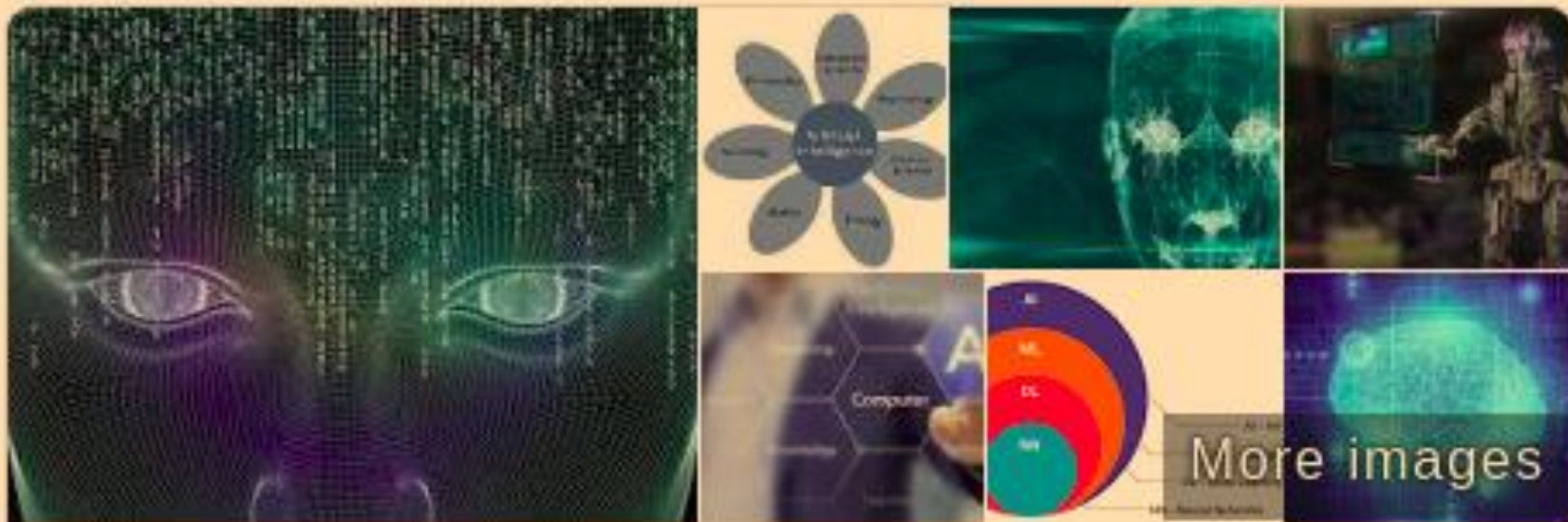
- Phenomena-driven
- Does not change once created



Machine learning:

- Data-driven
- Like educated "guess and check"





# Artificial intelligence



Field of study

Artificial intelligence, sometimes called machine intelligence, is intelligence demonstrated by machines, in contrast to the natural intelligence displayed by humans and other animals. [Wikipedia](#)

## Dictionary

Search for a word



# ar·ti·fi·cial in·tel·li·gence

/,ärdə'fiʃəl in'teləjəns/ 

*noun*

the theory and development of computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.



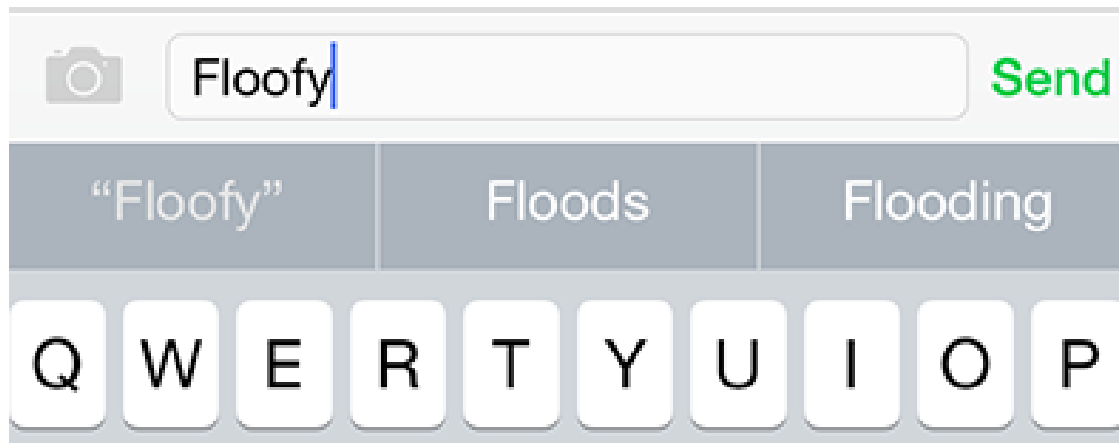
Translations, word origin and more definitions

# Quick Challenge: AI or marketing hype?

---

Take this to mean whatever you want!







**amazon.com**

## More to Explore

Customers who have shown an interest in point-and-shoot cameras might like to take a look at this week's bestselling products from Kodak.



[Kodak EasyShare  
C143 Digital  
Camera \(Blue\)](#)



[Kodak EasyShare  
C143 12 MP  
Digital Camera  
with 3X Optical  
Zoom and 2.7-  
Inch LCD \(Silver\)](#)



[Kodak EasyShare  
C195 Digital  
Camera \(Purple\)](#)



[Kodak EasyShare  
Sport C123 12 MP  
Waterproof Digital  
Camera with 2.4-  
Inch LCD - Blue  
\(New Model\)](#)





# **iRobot®** **Roomba®**

Staubsaug-Roboter

Die revolutionäre  
Art der Reinigung



## Taco Tuesday

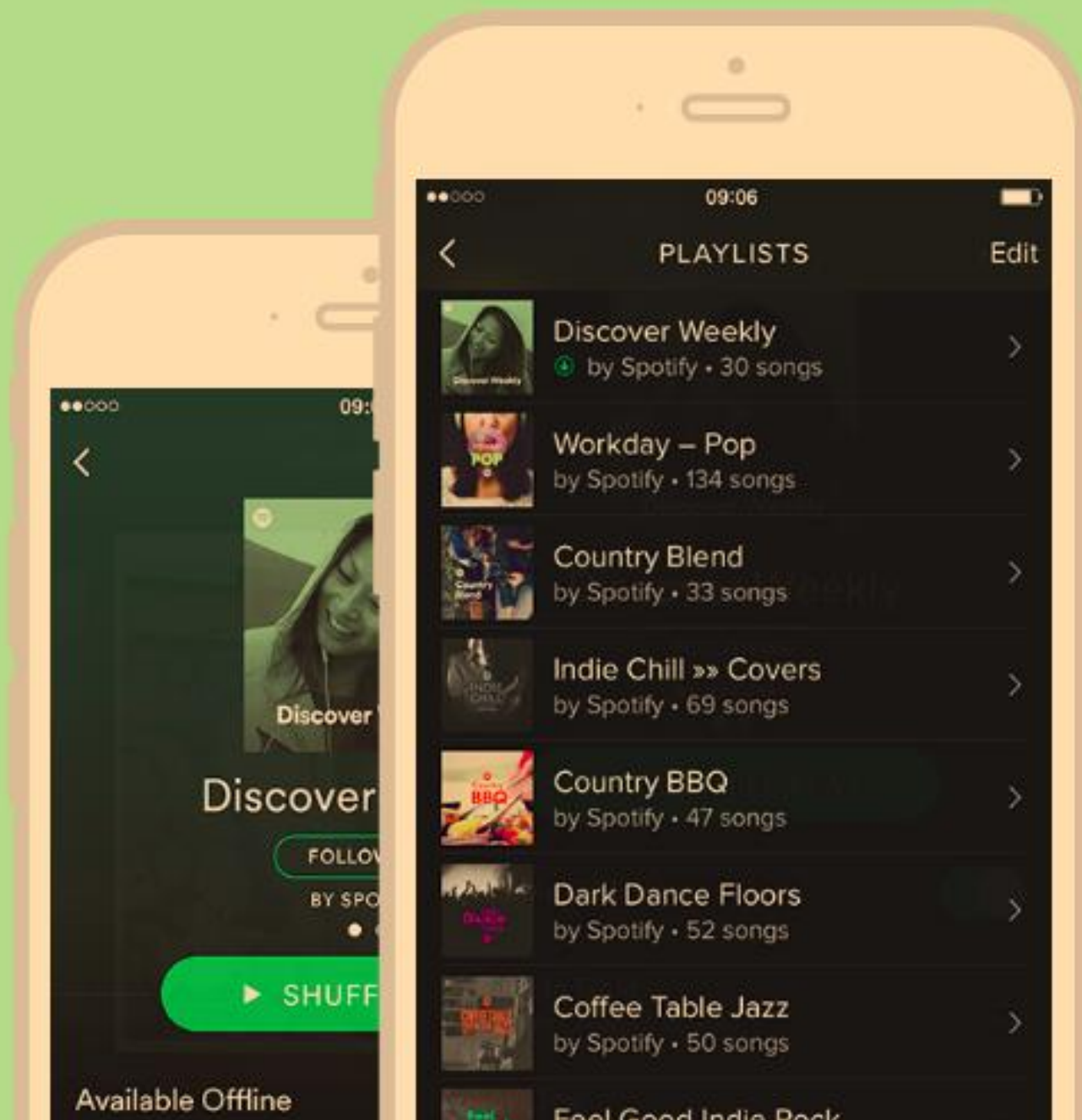


Jacqueline Bruzek ×

## Taco Tuesday

Hey Jacqueline,

Haven't seen you in a while and I hope you're doing well.



# It's all yours.

Your playlist is crafted just for you, based on the music you already love.







For how many people?

8



Choose a time

7pm

We have the following  
dates available still.  
Which date would you  
like to book?

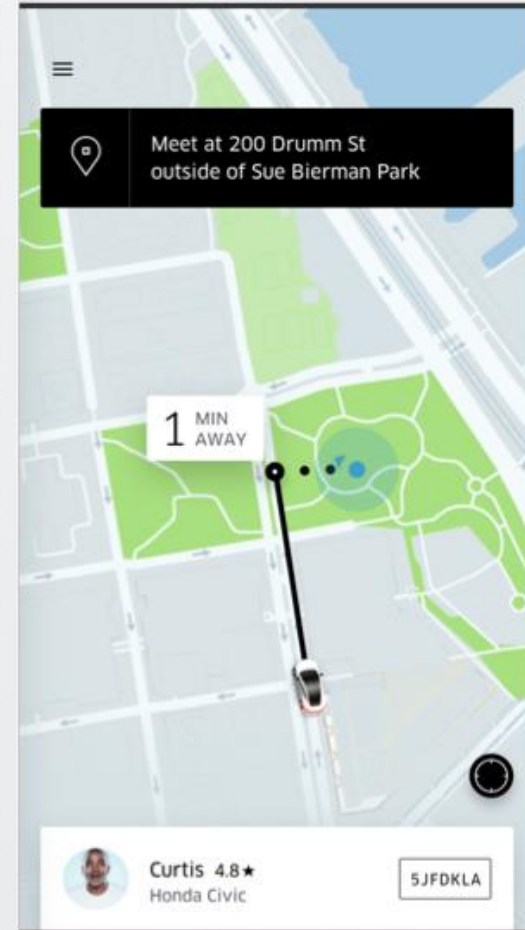
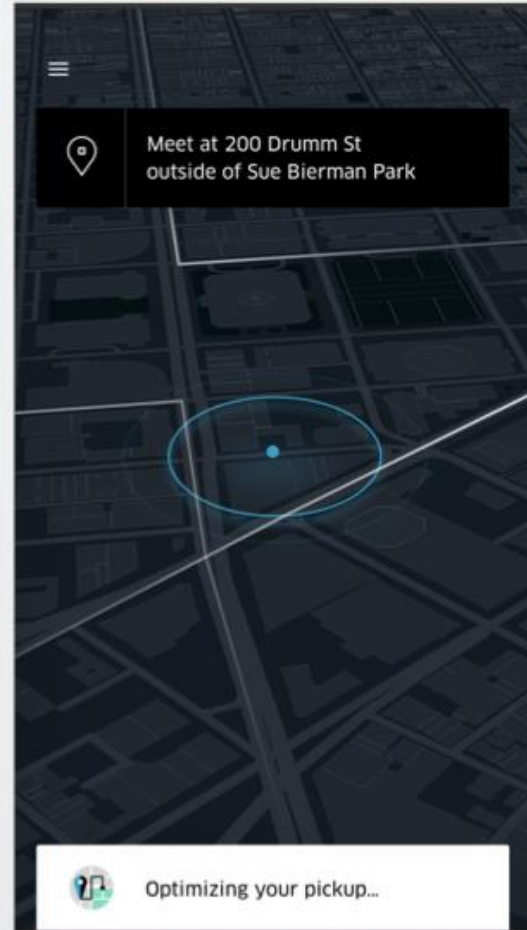
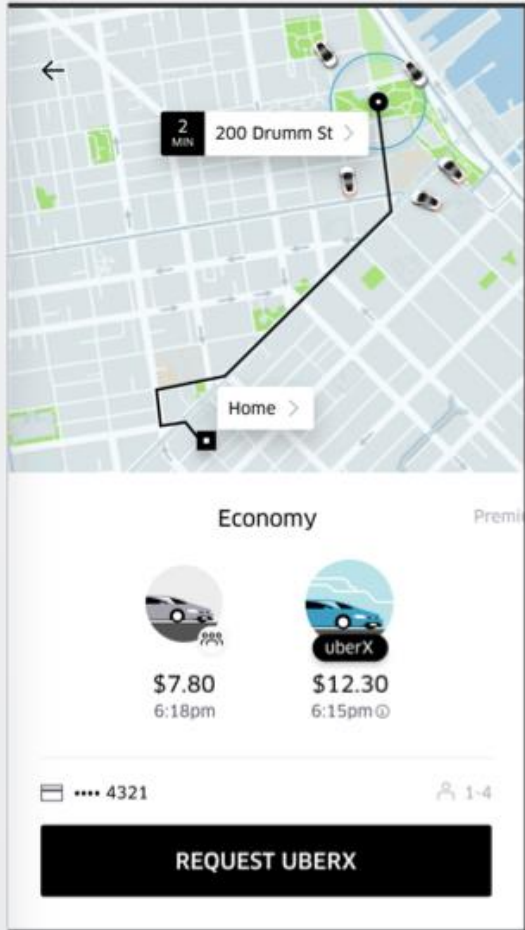


22/12/2016

Thanks Owen  
LoyaltyApps. We've  
booked you a table for 8  
at 7pm on 22/12/2016.  
We look forward to  
seeing you!



Type a message...



















### 3. Why should we care?

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