



Doing Business in a Data Driven World: From Data to Intelligence

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< 0.5%

Of data is analysed
Forrester, 2017

Think

Bigger

81%

**Of marketers don't feel they have a
single view of their customers**

Experian, Digital Marketer Report

200k

**Unfilled data science roles
due to skill gaps**



- Analyzed petabytes of data to determine impact of artist leaving
- Figured out how to keep artist's fans happy and engaged after departure



Machine Learning

lets us solve problems without knowing how to explicitly create the solution



What is Machine Learning?



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Machine Learning is a buzz word we see EVERYWHERE these days



A quick exercise....try to finish the sequence...

a. $3 - 9$

b. $4 - 16$

c. $8 - 64$

d. $9 - ?$

Did you get 81? How?

You took a-c, learned, and applied that learning to example d.

Learning:

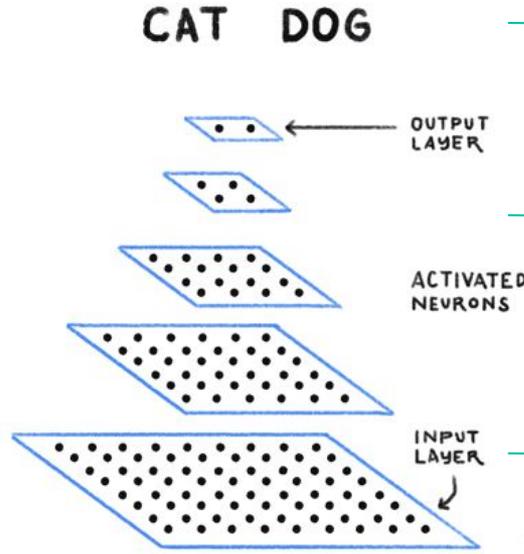
That's exactly the kind of behavior that we are trying to teach to machines.
We are trying to teach machines to “**Learn from Experience**”.

How ML works: Teaching a computer to recognize a dog on YouTube

IS THIS A
CAT or **DOG**?



The sensors of the neural network might start by understanding what edges and colors it is looking at.



The last layer, called the connected layer, summarizes all this analysis and gives the probability of whether it is looking at a dog.

A third layer is trying to conceptualize what these shapes represent (for instance, is it an animal or something else?).

Another layer is trying to understand what shapes it is looking at.

What is machine learning?



Basically, it means that computers don't need to be told exactly what to do.

They can be given an objective and lots of data, and teach themselves how to do it.

Why is this important?



1

At Google we believe machine learning will transform every business, both online and offline — how decisions are made, how processes improve.

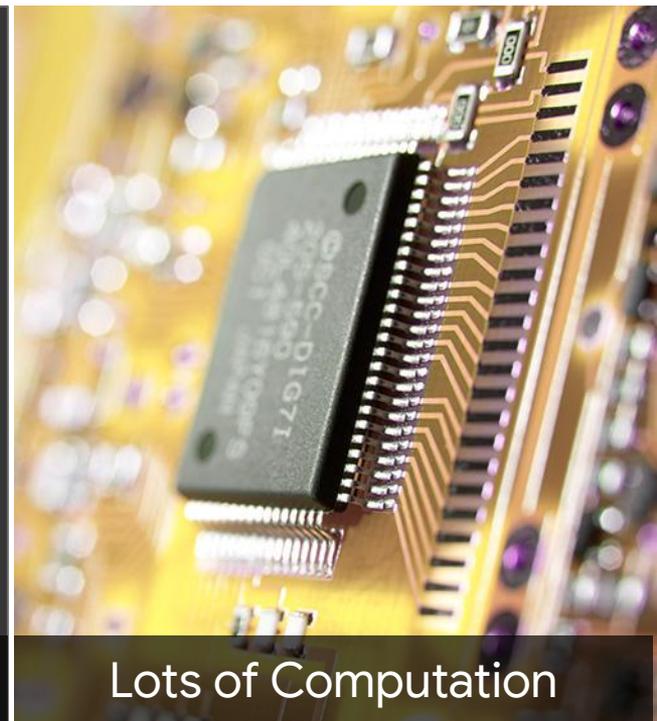
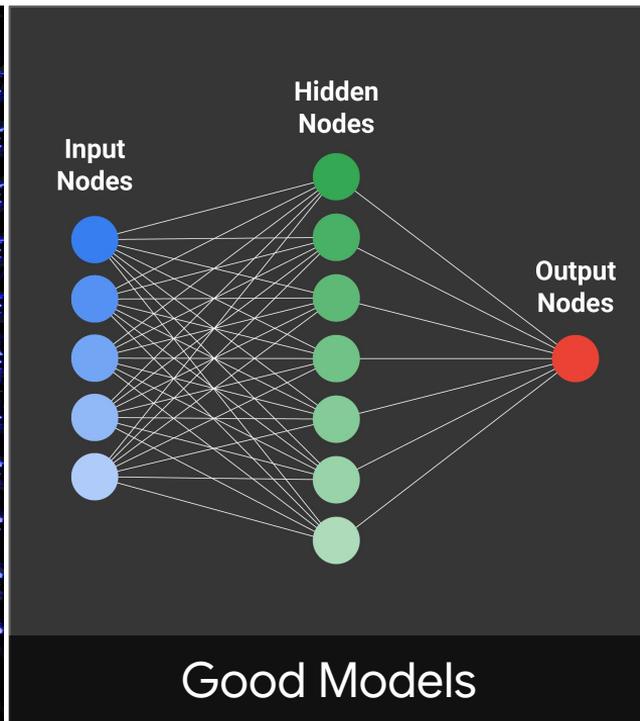
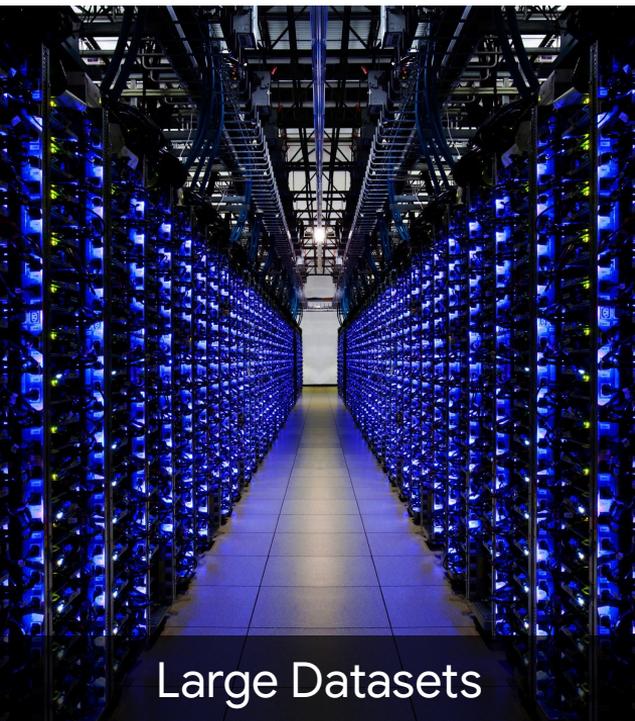
2

This technology will redefine many industries such as healthcare, financial services, energy among many others

3

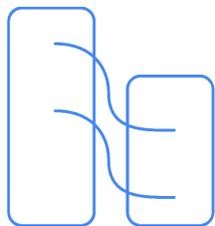
The power of machine learning is allowing us to solve more complex problems, faster than ever before.

Why now?

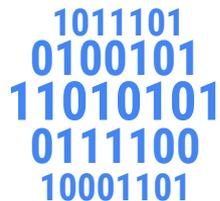


The challenges

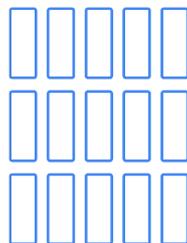
Legacy Applications



Data Silos Everywhere



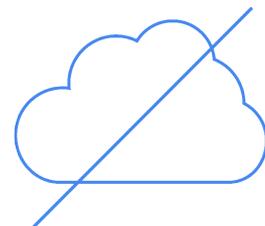
Changing View on Value of Data



Regulatory Environment



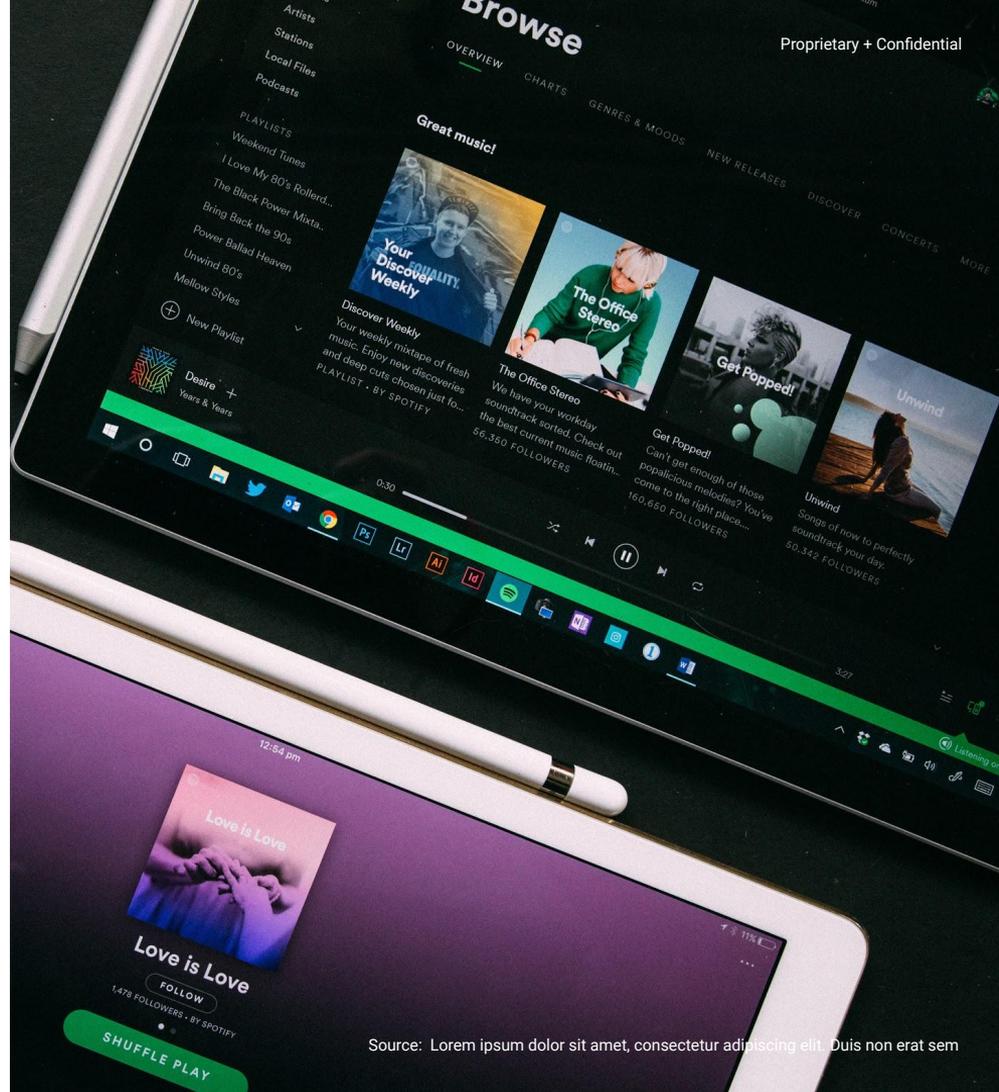
Limited Skills, Hard to Recruit



Unique Recommendations

Spotify's 'Discover Weekly' promotion

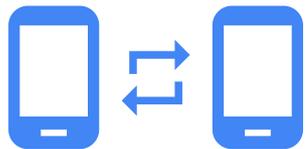
Songs 'hand-picked' by machine learning algorithms



Proprietary + Confidential

Source: Lorem ipsum dolor sit amet, consectetur adipiscing elit. Duis non erat sem

Optimize step by step



Capture



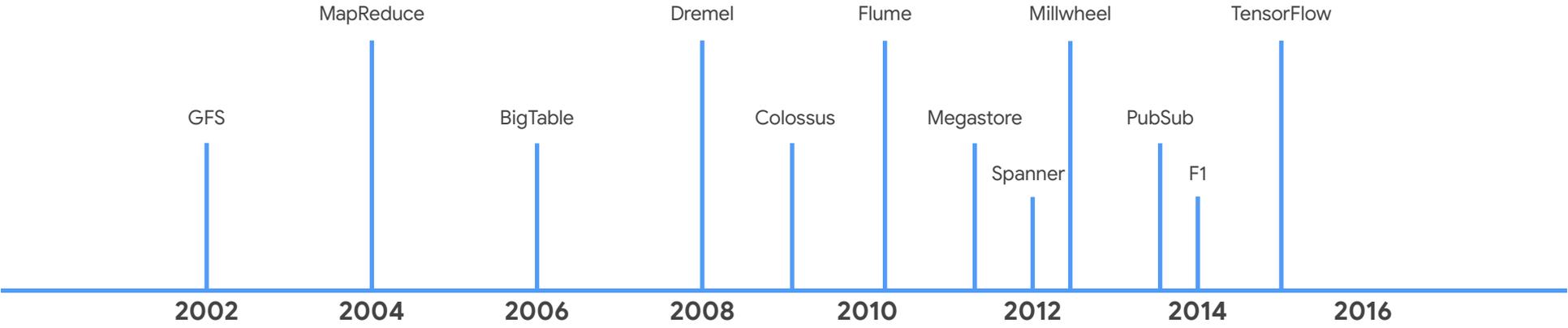
Store

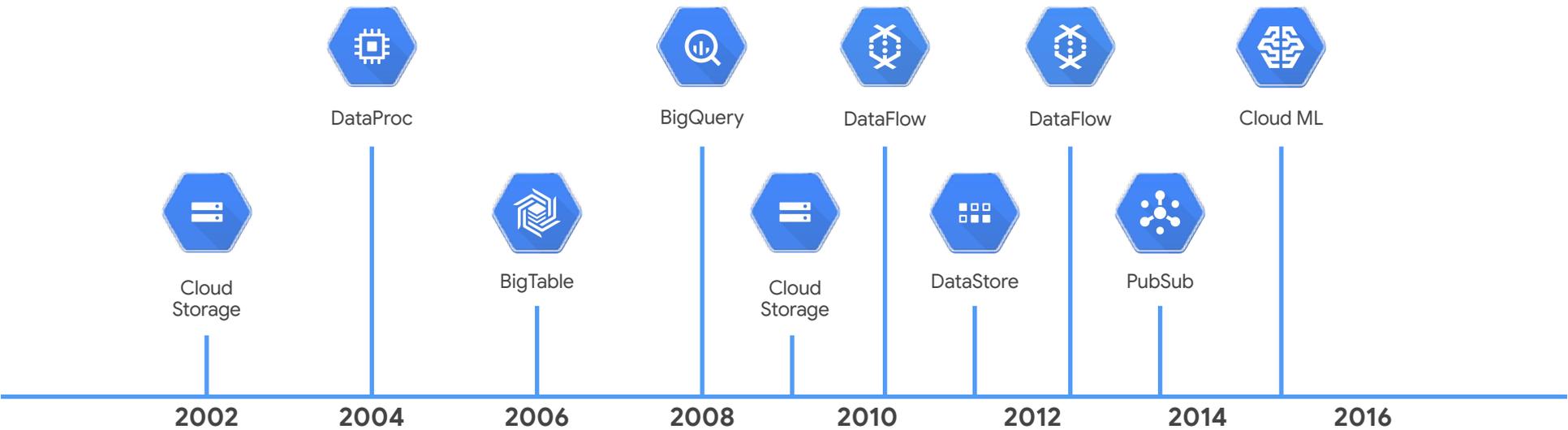


Process



Analyze







Search
Search Ranking
Speech Recognition



Android
Keyboard and
Speech Input



Play
App Recommendations
Game Developer Experience



Gmail
Smart Reply
Spam Classification



Drive
Intelligence in Apps



Chrome
Search by Image



Photos
Photos Search



YouTube
Video Recommendations
Better Thumbnails



Maps
Street View Image
Parsing Local Search



Translate
Text, Graphic and Speech
Translations



Cardboard
Smart Stitching



Ads
Richer Text Ads
Automated Bidding



Self Driving Car
1.5MM miles driven



Data Center Power Usage
Reduced cooling energy 40%



Alpha Go
First AI to beat a world Go
champion (2016)

We use machine learning everyday



Virtual Assistants



Traffic Predictions



Online Fraud Detection



Delivery Services



Unique recommendations

Virtual Assistants

Assist in finding information, when asked over voice

“What is my schedule for today?”

“What are the flights from Germany to London?”

“Set an alarm for 6 AM next morning.”

“Remind me to visit Visa Office day after tomorrow.”



Traffic Predictions

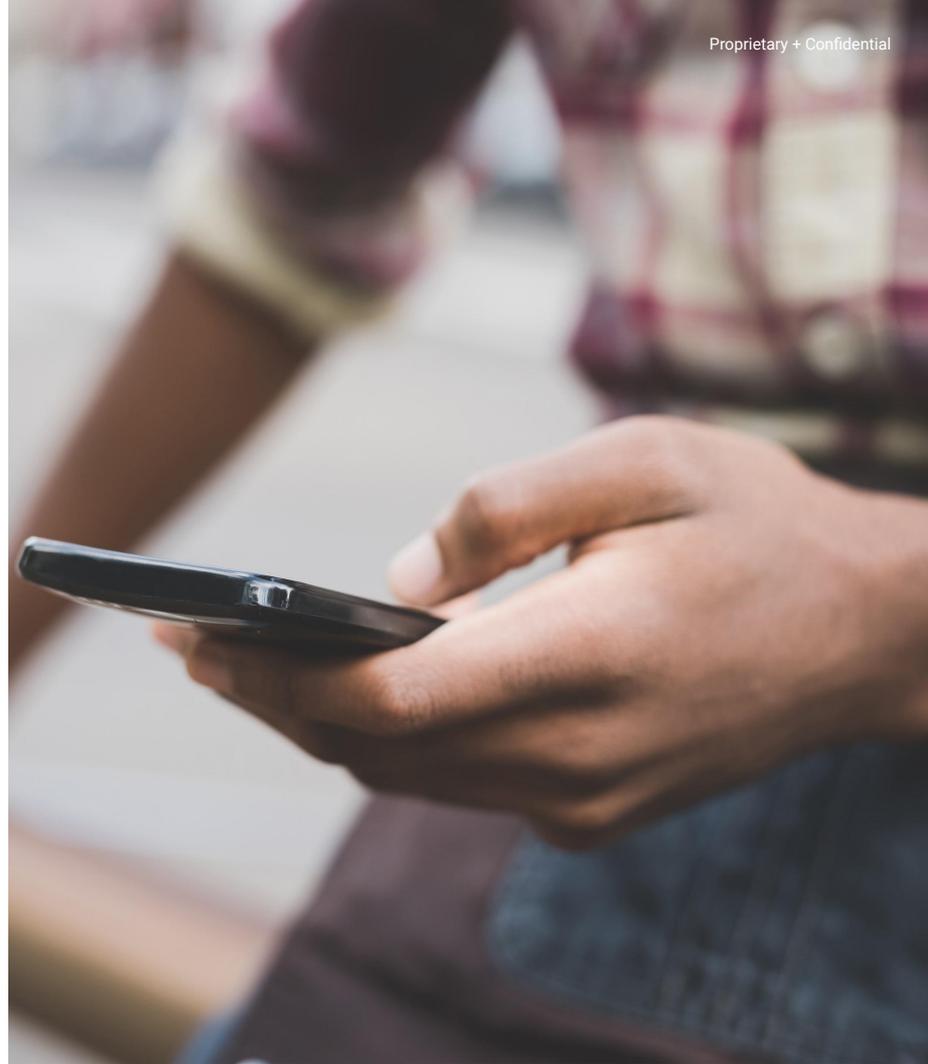
Our current locations and velocities are being saved at a central server for managing traffic. This data is then used to build a map of current traffic.



Online Fraud Detection

“ Did you really spend \$5000 in Guam yesterday?
Your Bank ”

Paypal uses Machine Learning for protection against money laundering.



Delivery Services

Your pizza will be ready in 36 minutes.

Dominos takes food preparation time into account to give you the best possible prediction of delivery time.

Uber's estimations improved by 26% and customer satisfaction increased.

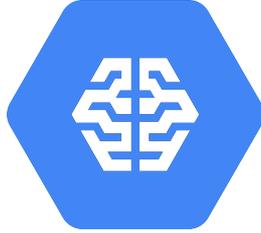


Machine Learning is enhancing industries too

- Healthcare
- Financial Services
- Retail
- Consumer Packaged Goods



Get your arms
around Big
Data



Invest time in
understanding
Machine Learning



Work with the right
partner

Three steps for success

**What are you doing with
your data today?**

Thank you!

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