



Fashion & Big Data

Mamy Ratsimbazafy
mamy@numforge.co





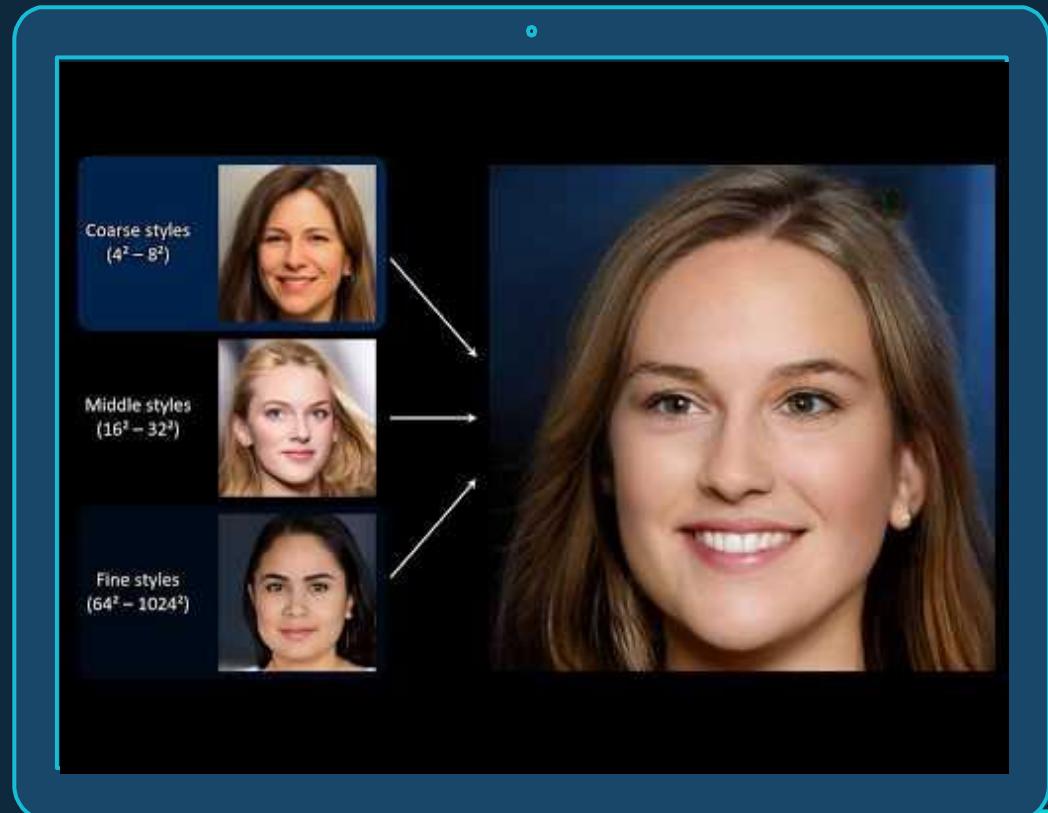
Celebrity generator

Nvidia, dec 2017



StyleGAN

Nvidia, dec 2018





Hello!

I am Mamy Ratsimbazafy

I'm a freelance Data Scientist and an Ethereum & Blockchain researcher.

You can contact me at mamy@numforge.co

Or LinkedIn:

<https://www.linkedin.com/in/mamyratsimbazafy/>





Key takeaways

- ◊ Keywords & Buzzwords
- ◊ How is and can data be used for Fashion?
- ◊ Business value and limits





Key takeaways

- ◊ Keywords & Buzzwords
- ◊ How is “Artificial Intelligence” used in Fashion?
- ◊ Business value and limits





1

Keywords & Buzzwords

Let's start make sure we talk about the same things



Keywords & Buzzwords



Keywords & Buzzwords

Big Data

Machine Learning

Neural Network

Artificial Intelligence

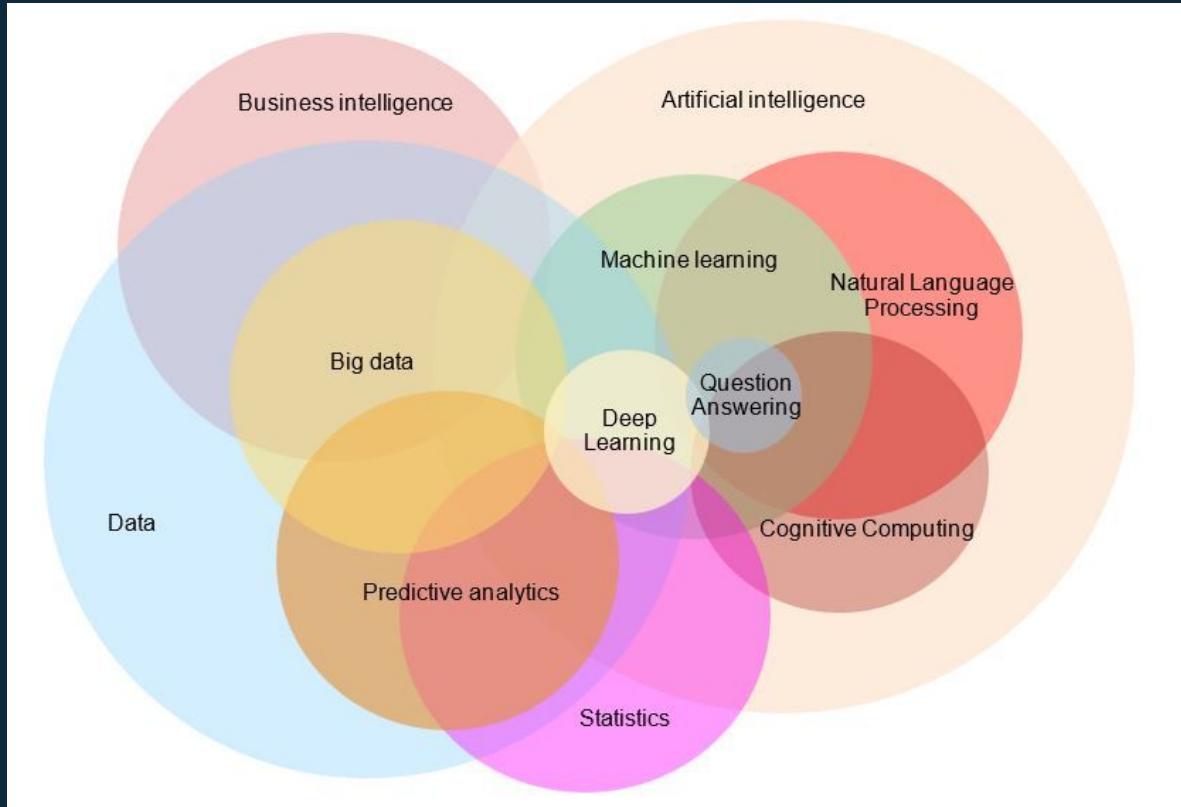
Deep Learning

Data Science

Reinforcement
Learning

Singularity

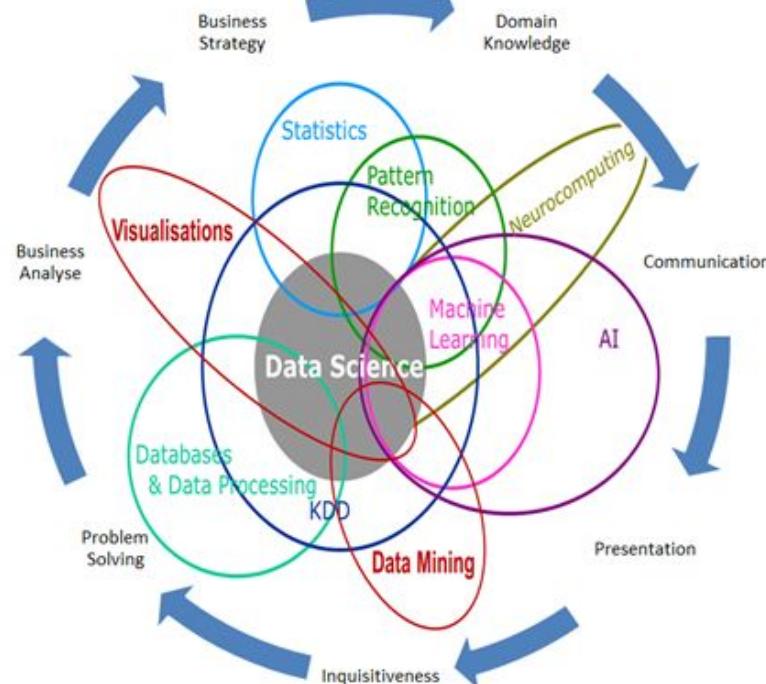
IBM Venn Diagram



Brendan Tierner's Venn Diagram

Data Science Is Multidisciplinary

By Brendan Tierney, 2012



Big Data?





Big Data?

1	A	B	C	D
	DE Order	Category	Date	
2	5	Beauty	1/7/2013	
3	7	Beauty	1/8/2013	
4	1	Collectible	1/4/2013	
5	10	Collectible	1/9/2013	
6	8	Fashion	1/9/2013	
7	14	Fashion	1/11/2013	
8	9	Health	1/9/2013	
9	2	Home	1/4/2013	
10	6	Jewelry	1/7/2013	
11	11	Jewelry	1/10/2013	
12	13	Jewelry	1/11/2013	
13	4	Misc	1/6/2013	
14	12	Misc	1/10/2013	
15	3	Watches	1/5/2013	
16				



Not!



Big Data?

“Big Data is like teenage sex: everyone talks about it, nobody really knows how to do it, everyone thinks everyone else is doing it, so everyone claims they are doing it ...”

- Dan Ariely, Professor of Psychology and Behavioural Economics at Duke University





Big Data

- Velocity
- Volume
- Variety

Big Data



Amazon's recommender system

Simplilearn



Artificial Intelligence?



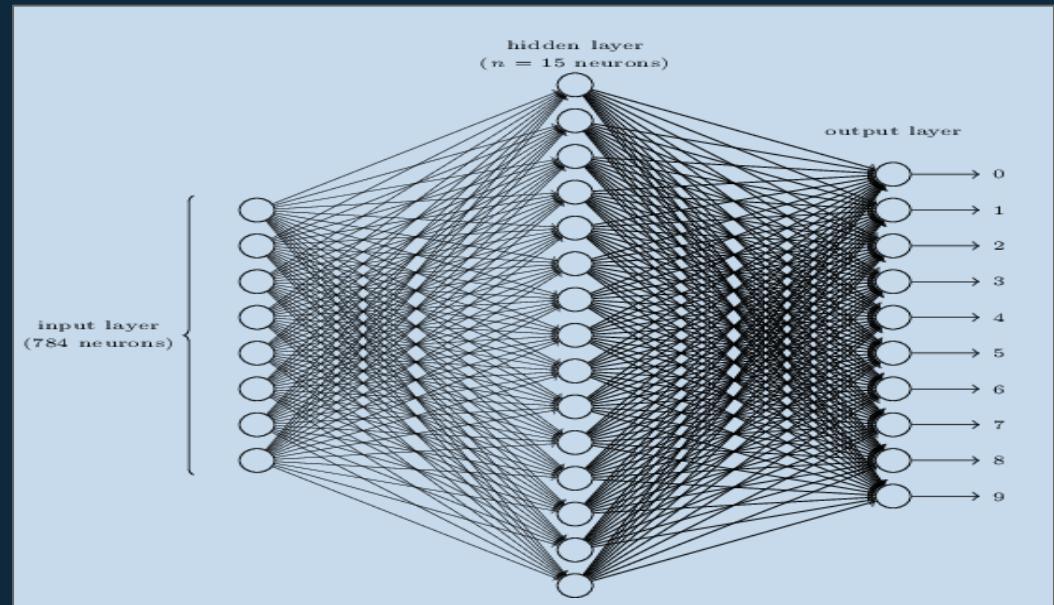
Artificial Intelligence?

Machine Learning for Perception

Multi-Layer Perceptron

Yann Lecun at Bell Labs
(1989)

Currently Director of Facebook's AI research

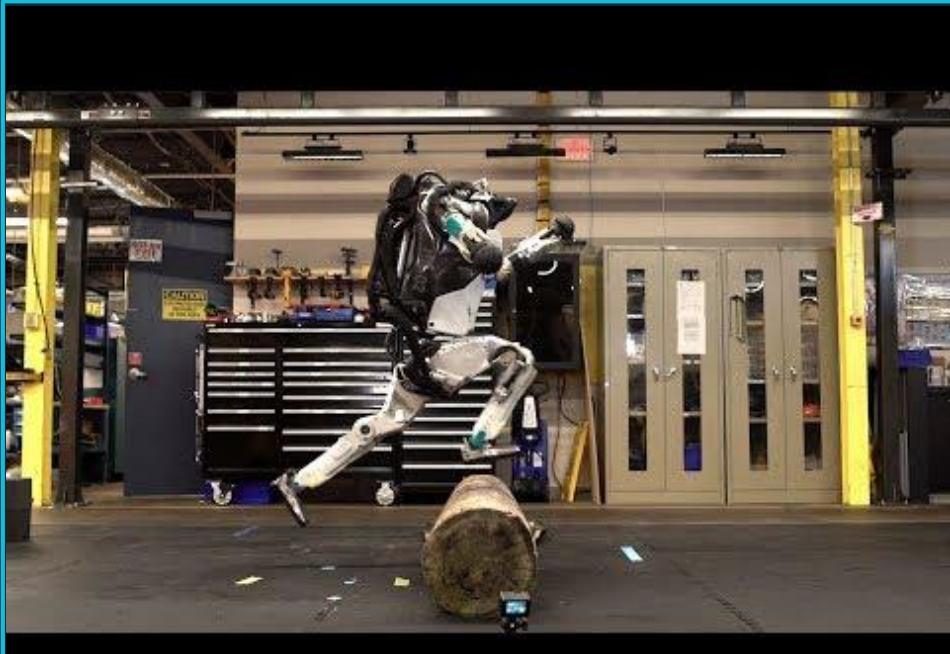




Optimal Control for Engineering

Parkour Atlas

Boston Dynamics, 2018





Artificial Intelligence?

Optimal Control

"Optimal control deals with the problem of finding a control law for a given system such that a certain optimality criterion is achieved.

Optimal control deals with the problem of finding a control law for a given system such that a certain optimality criterion is achieved.

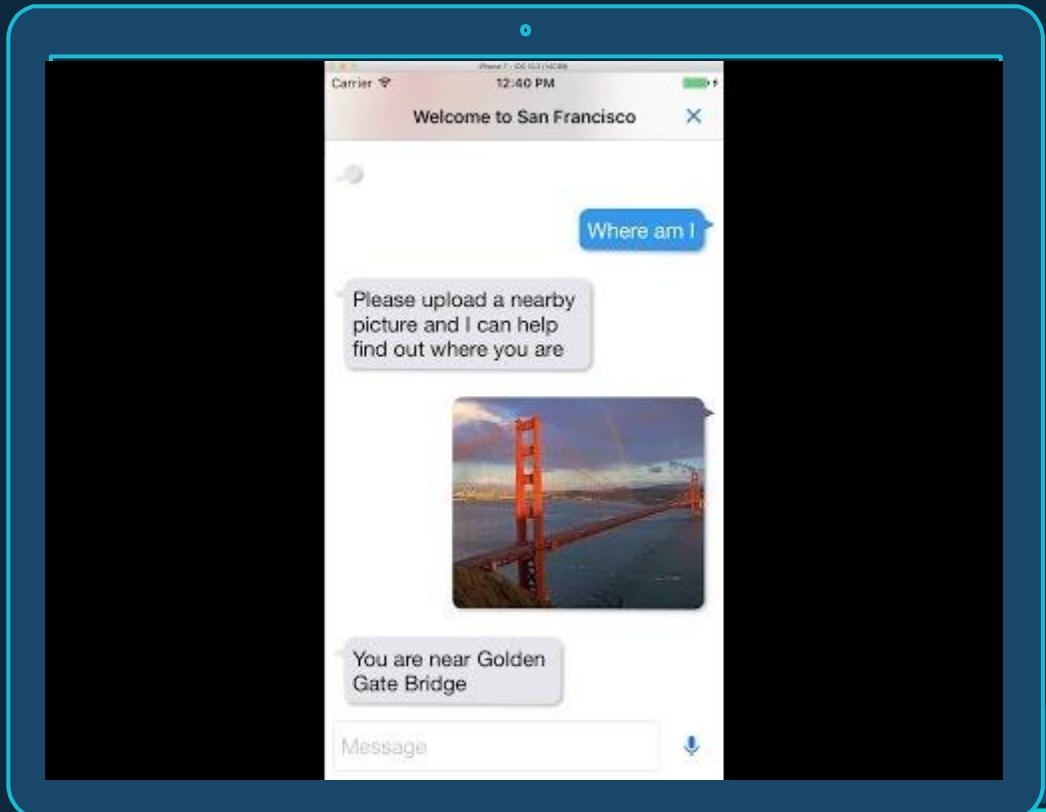
Consider a car traveling in a straight line on a hilly road. The question is, how should the driver press the accelerator pedal in order to minimize the total traveling time? Clearly in this example, the term control law refers specifically to the way in which the driver presses the accelerator and shifts the gears. The system consists of both the car and the road, and the optimality criterion is the minimization of the total traveling time. Control problems usually include ancillary constraints. For example, the amount of available fuel might be limited, the accelerator pedal cannot be pushed through the floor of the car, speed limits, etc.

Another optimal control problem is to find the way to drive the car so as to minimize its fuel consumption, given that it must complete a given course in a time not exceeding some amount. Yet another control problem is to minimize the total monetary cost of completing the trip, given assumed monetary prices for time and fuel."



Machine Learning for Conversation

Google Assistant, 2018



Machine Learning for Decisions

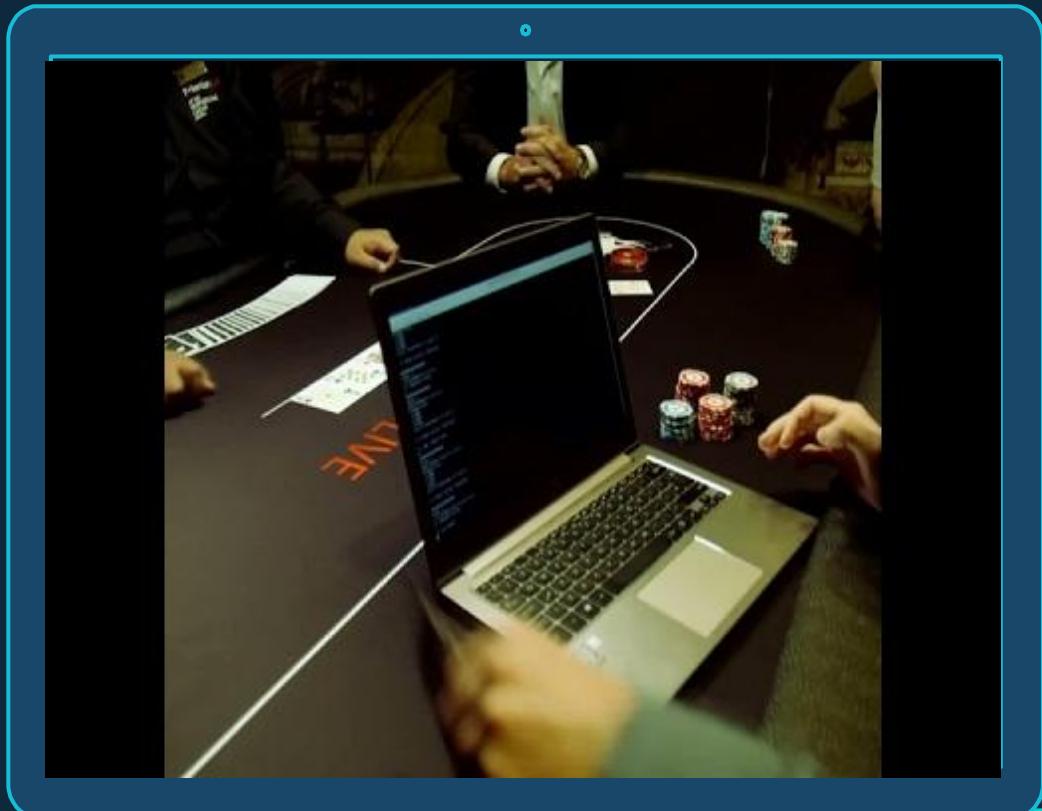
Self Driving Taxi, Navya





Reinforcement Learning for Games

Poker, Carnegie Mellon U





Reinforcement Learning for negotiation

“Deal or no deal”, Facebook, 2017

Divide these items between you and your partner.

You will receive one item each with different values

You get one item, and your partner will get the rest!

If you get a greatest for you then we will send a bonus!

If you change four times then your work may be imposed

Items to Split Between You and Partner	Value Each Item	Number You Get
	0	0.4
	7	0.6
	1	0.4

Fellow Turker connected. Please send a message!

Type Message Here:

Message

Send

Artificial Intelligence?

Machine Learning for Art

Obvious, 2018

Portrait of Edmond Belamy

Sold at Christie's for



Artificial Intelligence?



The first piece of AI-generated art to come to auction | Christie's

[https://www.christies.com/.../A-collaboration-between-two-artists-one-human-one-a-m... ▾](https://www.christies.com/.../A-collaboration-between-two-artists-one-human-one-a-m...)

AI artwork sells for \$432,500 — nearly 45 times its high estimate — as Christie's becomes the first auction house to offer a work of art created by an algorithm.

Christie's sells AI-created artwork painted by an algorithm for \$432,000

[https://www.dezeen.com/.../christies-ai-artwork-obvious-portrait-edmond-de-belamy-... ▾](https://www.dezeen.com/.../christies-ai-artwork-obvious-portrait-edmond-de-belamy-...)

Oct 29, 2018 - Christie's became the first auction house to put an artwork generated by an algorithm under the hammer, when the abstract portrait was sold by ...

AI Art at Christie's Sells for \$432,500 - The New York Times

<https://www.nytimes.com/2018/10/25/arts/design/ai-art-sold-christies.html>

Oct 25, 2018 - "Edmond de Belamy, from La Famille de Belamy" sold for \$432,500 including fees, over 40 times Christie's initial estimate of \$7,000-\$10,000. The distorted portrait, by the French art collective Obvious, was marketed by Christie's as the first portrait generated by an ...

Christie's Sells "AI-Generated" Art for \$432,500 As Controversy Swirls ...

[https://hyperallergic.com/.../christies-sells-ai-generated-art-for-432500-as-controversy... ▾](https://hyperallergic.com/.../christies-sells-ai-generated-art-for-432500-as-controversy...)

Oct 29, 2018 - Before the auction, Christie's refused journalists' requests for comment on the questionable attribution of the AI-generated artwork. Now, the ...

AI-Generated Artwork 'Edmond de Belamy' Sells for \$432,500 at ...

[https://motherboard.vice.com/en_us/article/.../ai-generated-artwork-just-sold-at-christi... ▾](https://motherboard.vice.com/en_us/article/.../ai-generated-artwork-just-sold-at-christi...)

Oct 25, 2018 - An AI-generated print sold for \$432,500 at Christie's auction house in New York on Thursday, over 40 times more than it was expected to fetch.

How three French students used borrowed code to put the first AI ...

[https://www.theverge.com/.../ai-art-portrait-auction-christies-belamy-obvious-robbie-b... ▾](https://www.theverge.com/.../ai-art-portrait-auction-christies-belamy-obvious-robbie-b...)

Oct 23, 2018 - The auction house Christie's will make art history by selling its first AI portrait, ... Exploring the latent space of AI-generated landscape paintings ...



Artificial Intelligence?

How do you even define Intelligence?



Artificial Intelligence

Singularity:

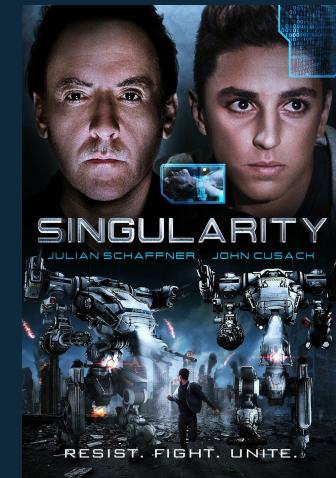
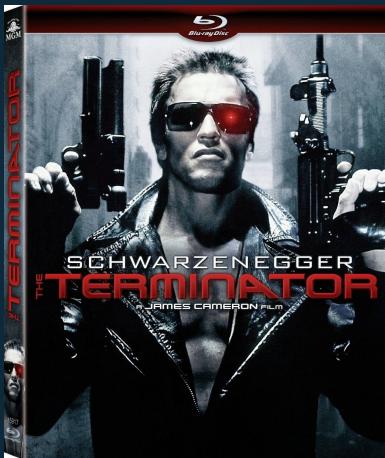
A point in our future where all predictions are off.

AI can self-improve without human supervision, and the self improved AI can improves itself even better.

This recursive self-improvement leads to exponential technological change.

Artificial Intelligence

Singularity in the pop culture



Artificial Intelligence

“Singularity” in a data scientist life

- Domain knowledge is valuable to improve our model.
- For now, we need manual annotation
- We need a lot of data



- As good as the data and the data scientist's craftsmanship
- As biased as the data and the data scientist

Artificial Intelligence

“Singularity” for an AI company

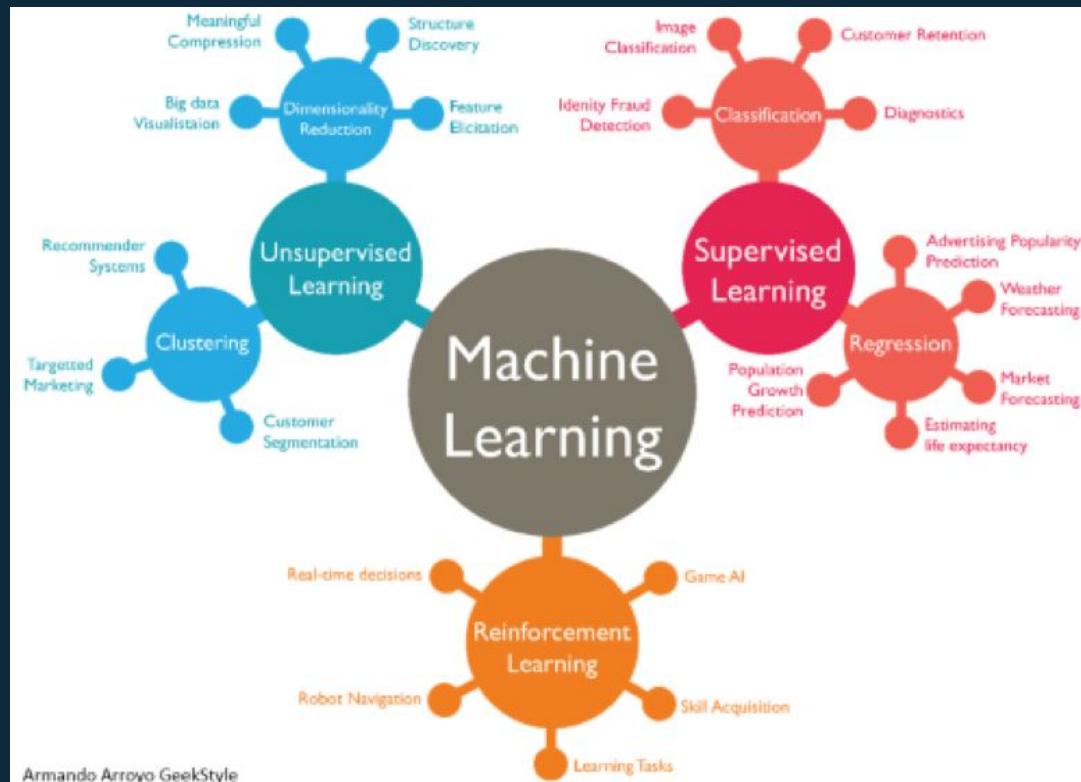




Artificial Intelligence

**Machine Learning at the moment
creates specialists**

Machine Learning

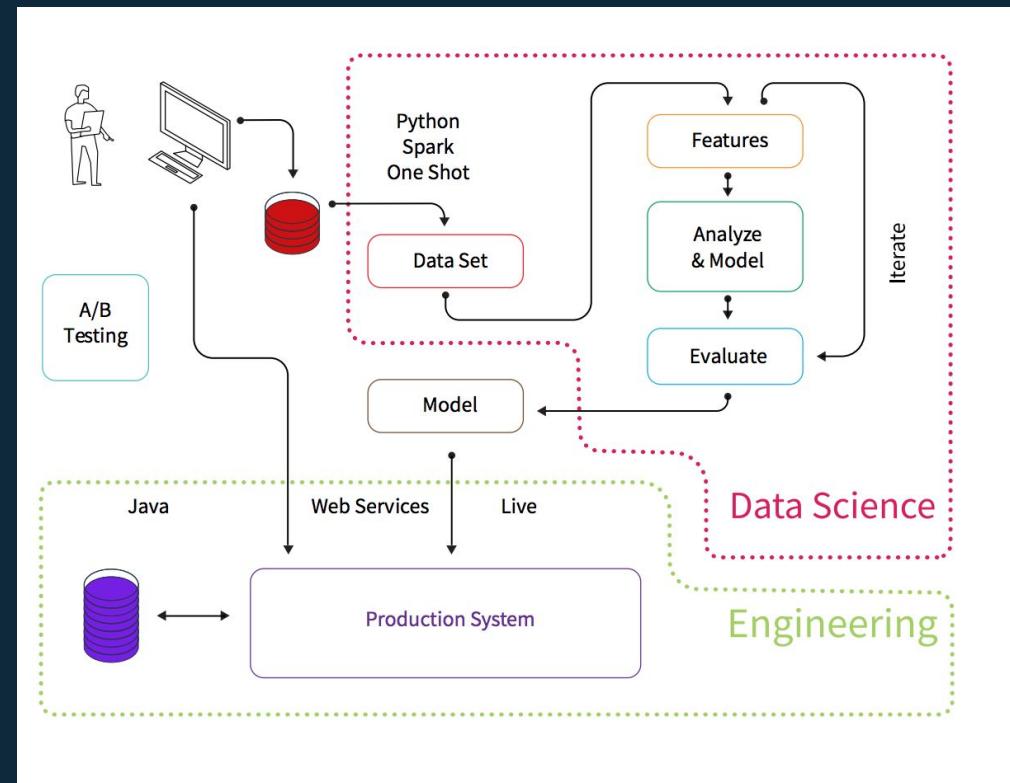




Machine Learning Pipeline

Dataiku

Machine Learning



A decorative cluster of six hexagonal icons in shades of teal and blue. From left to right: a small cyan hexagon, a large cyan hexagon containing a white lightbulb icon, a medium blue hexagon containing a white thumbs-up icon, a small dark blue hexagon, a cyan hexagon containing a white smartphone icon, and a medium blue hexagon containing a white magnifying glass icon.

Machine Learning

Supervised learning

Machine Learning

Supervised learning Classification

Muffin or Chihuahua



Apple or Barn Owl



Machine Learning

Advanced Supervised learning

Computer Vision Tasks

Classification



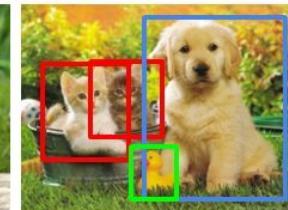
CAT

Classification + Localization



CAT

Object Detection



CAT, DOG, DUCK

Instance Segmentation



CAT, DOG, DUCK

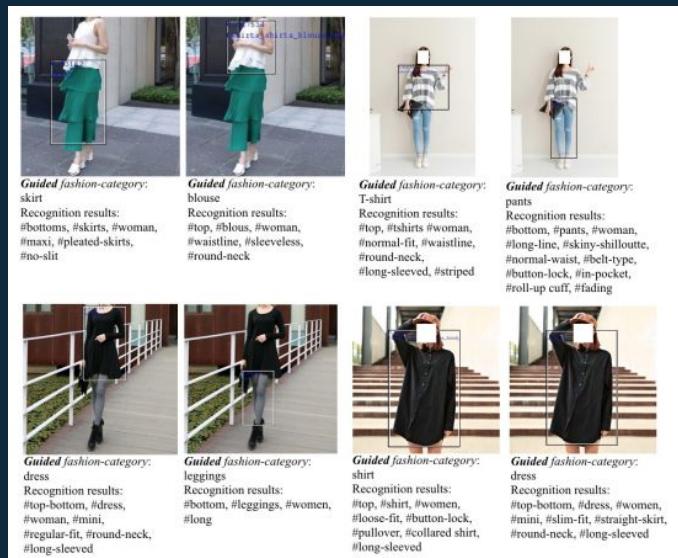
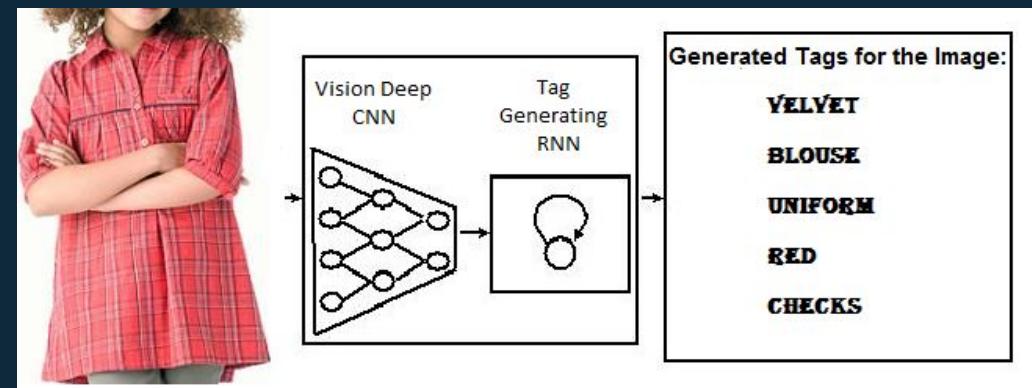
Single object

Multiple objects

Machine Learning

Advanced Classification

Multilabeling



Multi-Label Learning with RNNs for Fashion Search

Se-Yeong et al, 2017



Machine Learning Advanced ML For Fashion in 2018

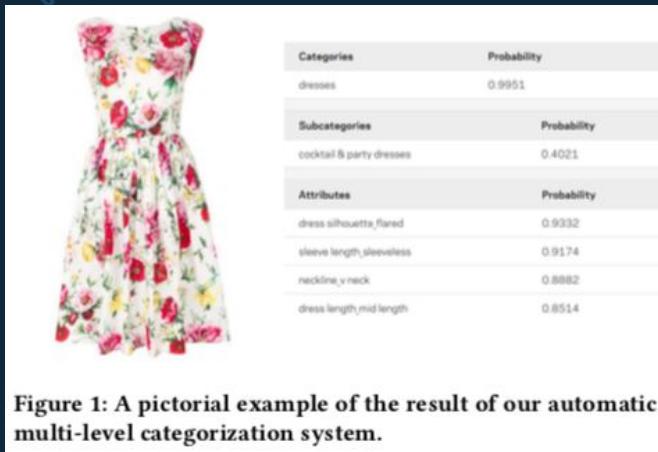


Figure 1: A pictorial example of the result of our automatic multi-level categorization system.



Figure 2: Each image is associated with visual concepts from several levels. We aim to jointly predict the classes/attributes for all levels only using visual features.

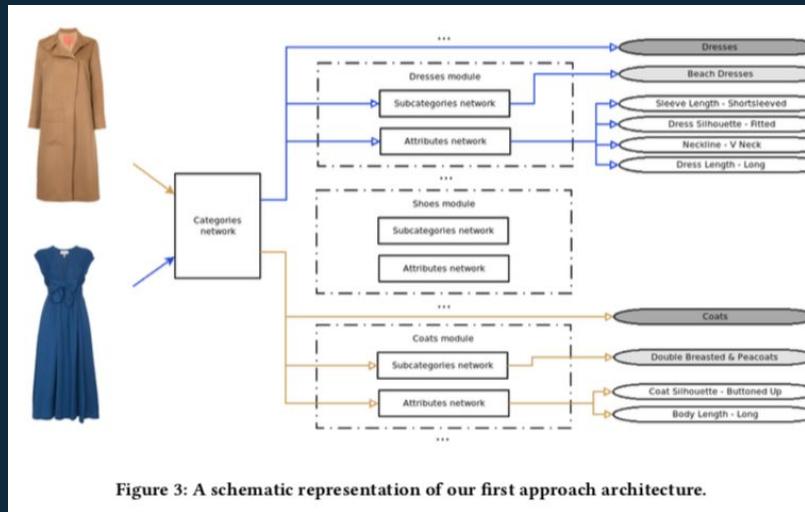
A Unified Model with Structured Output for Fashion Images Classification
Ferreira et al, 2018



Machine Learning

Advanced ML

For Fashion in 2018

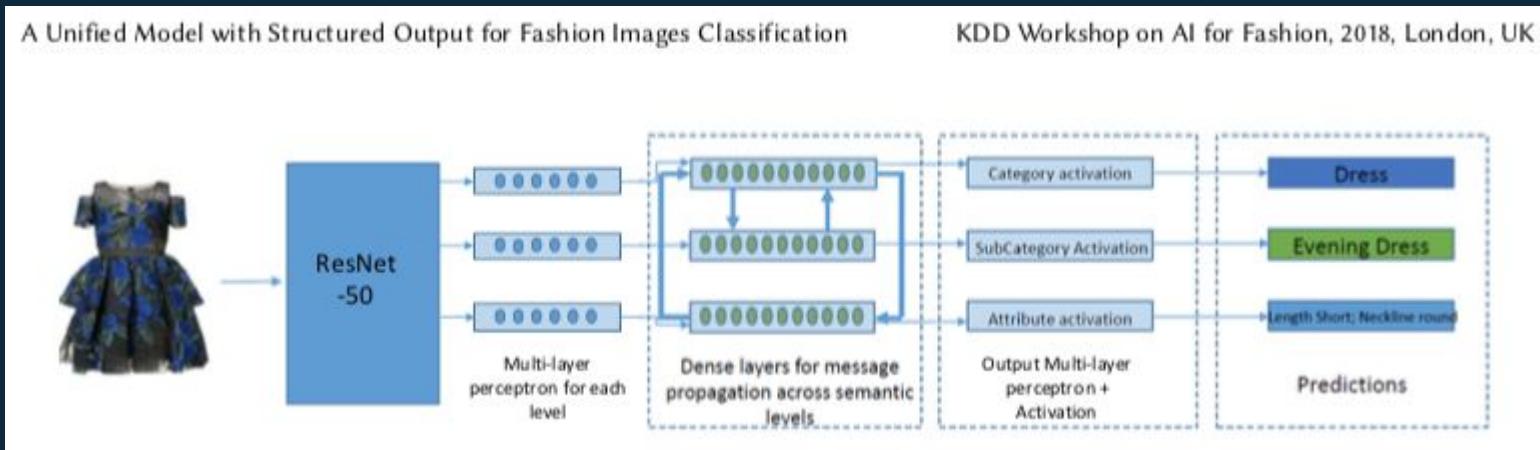


A Unified Model with Structured Output for Fashion Images Classification
Ferreira et al, 2018

Machine Learning

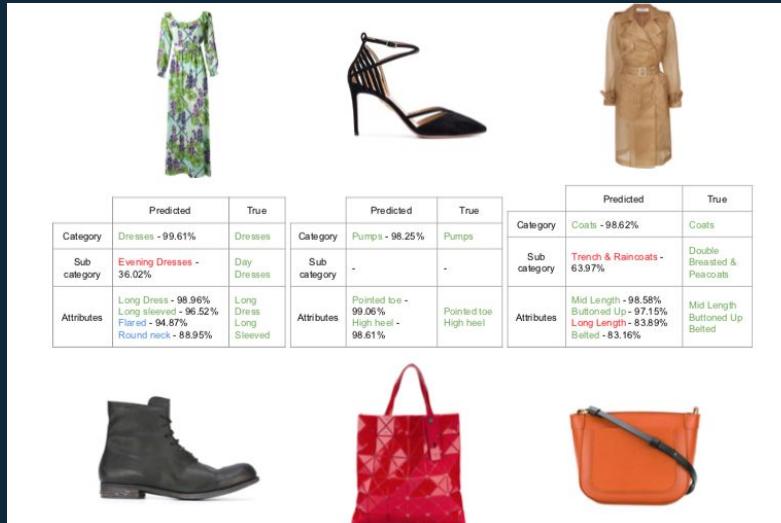
Advanced ML

For Fashion in 2018



A Unified Model with Structured Output for Fashion Images Classification
Ferreira et al, 2018

Machine Learning



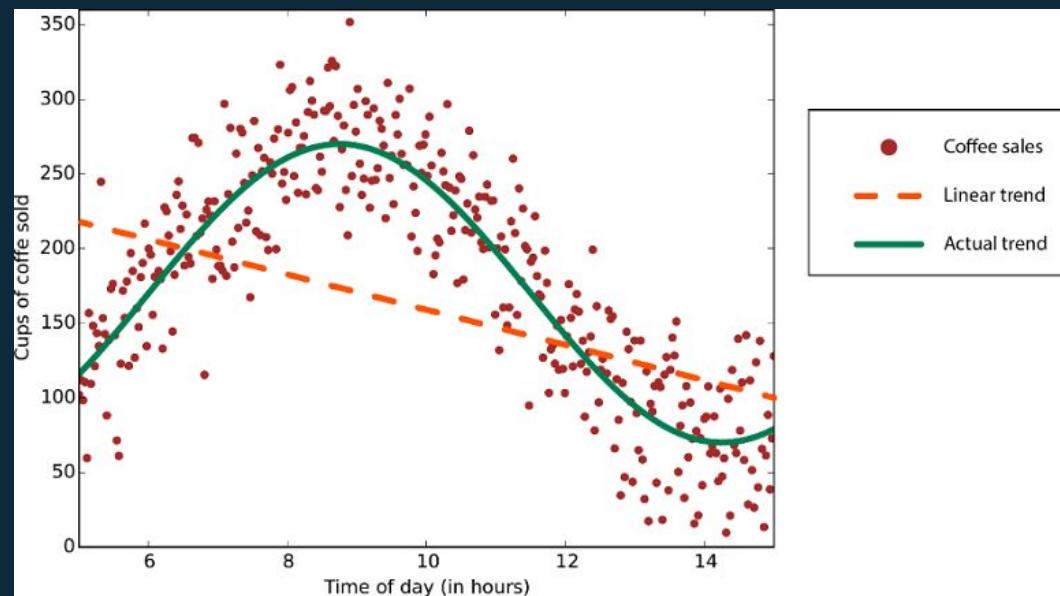
Predicted		True		Predicted		True		Predicted		True	
Category	Dresses - 99.61%	Dresses	Category	Pumps - 98.25%	Pumps	Category	Coats - 98.62%	Coats	Category	Trench & Raincoats - 63.97%	Trench & Raincoats
Sub category	Evening Dresses - 36.02%	Day Dresses	Sub category	-	-	Sub category	-	-	Sub category	Double Breasted & Peacoats	Double Breasted & Peacoats
Attributes	Long Dress - 98.96% Low Neck - 96.52% Flared - 94.87% Round neck - 88.95%	Long Dress Long Sleeved	Attributes	Pointed toe - 99.09% High heel - 98.61%	Pointed toe High heel	Attributes	Mid Length - 98.58% Buttoned Up - 97.15% Long Length - 83.85% Belted - 83.16%	Mid Length Buttoned Up Belted	Attributes	Mid Length - 98.58% Buttoned Up - 97.15% Long Length - 83.85% Belted - 83.16%	Mid Length Buttoned Up Belted

Predicted		True		Predicted		True		Predicted		True	
Category	Boots - 97.82%	Boots	Category	Tote Bags - 82.30%	Tote Bags	Category	Shoulder Bags - 47.44%	Shoulder Bags	Category	Shoulder Bags - 47.44%	Shoulder Bags
Sub category	-	-	Sub category	-	-	Sub category	-	-	Sub category	-	-
Attributes	Low Heel height - 85.76% Ankle Length - 82.46% Casual - 78.47%	Casual	Attributes	-	-	Attributes	-	-	Attributes	-	-

Figure 8: Examples of prediction results on some products from our dataset. We compare the predictions with the ground truth annotations. Correct predictions (matching the ground-truth) are shown in green, incorrect are in red, correct predictions missing in the ground truth annotations are in blue, and correct predictions but with a low confidence are in yellow.

Machine Learning

Supervised learning Regression

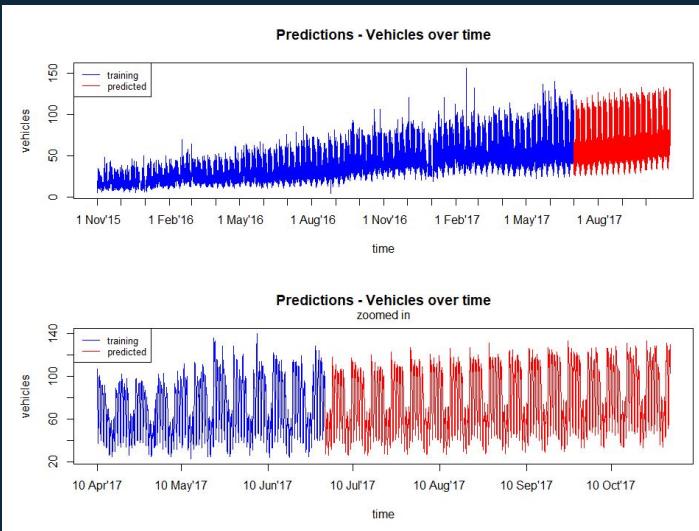




Machine Learning

Supervised learning

Regression -> Forecasting



Smart City Traffic
Prediction Challenge

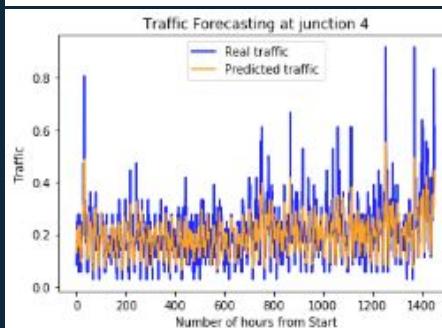
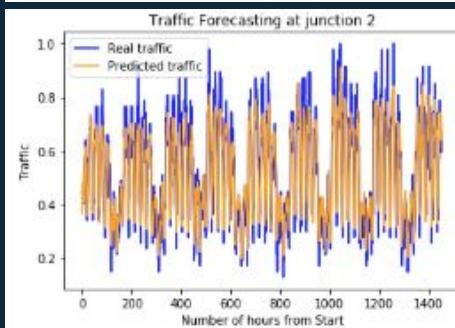
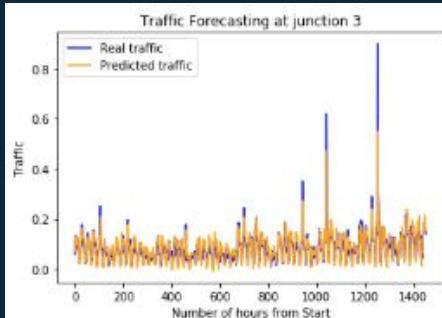
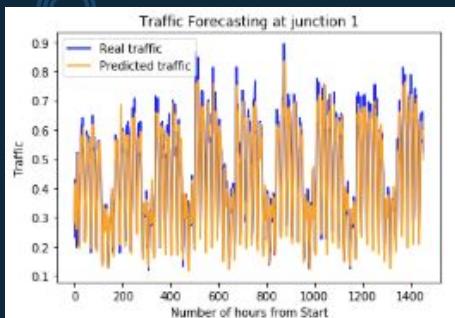
McKinsey, 2017



Machine Learning

Supervised learning

Regression -> Forecasting



Smart City Traffic
Prediction Challenge
McKinsey, 2017

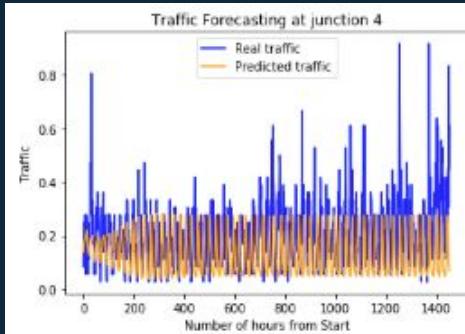
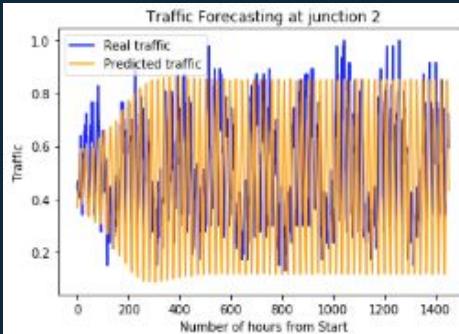
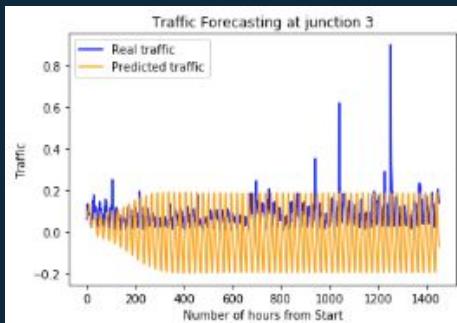
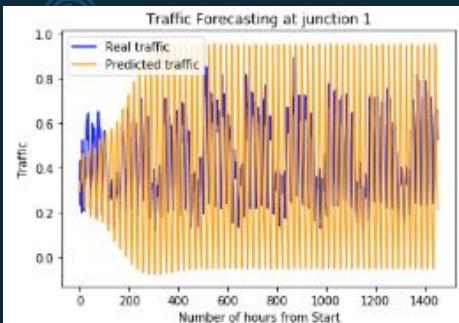
Neural Network
predicting 48 hours
ahead



Machine Learning

Supervised learning

Regression -> Forecasting



Smart City Traffic
Prediction Challenge
McKinsey, 2017

Neural Network
predicting 3 months
ahead

Google Traffic

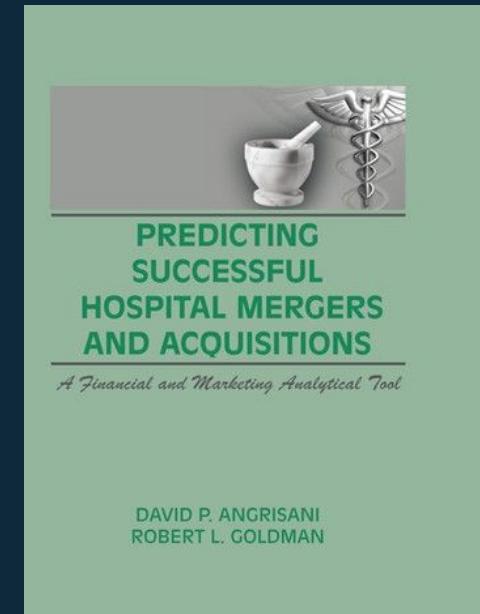
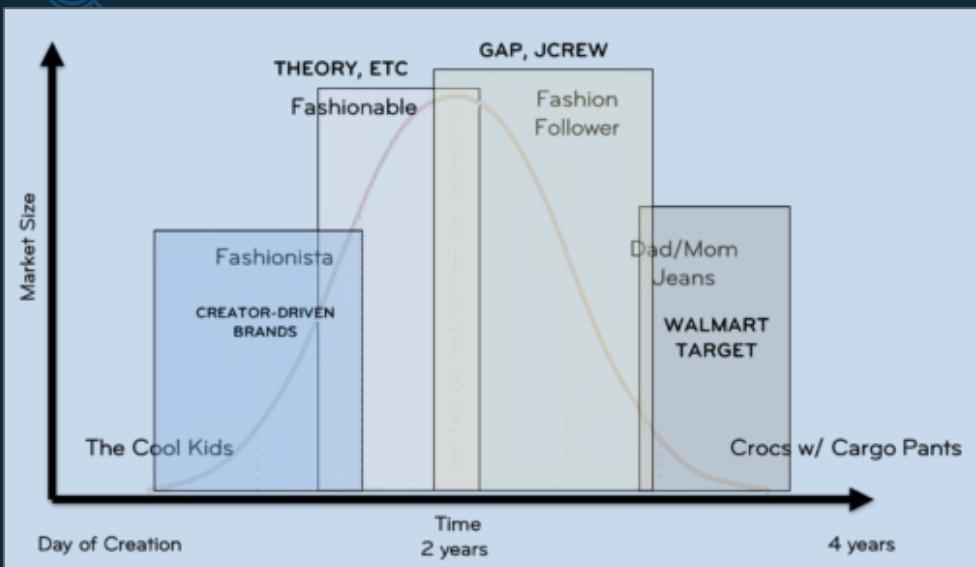


**HOW GOOGLE MAPS
PREDICTS TRAFFIC**

Machine Learning

Supervised learning

Can and Cannot do?

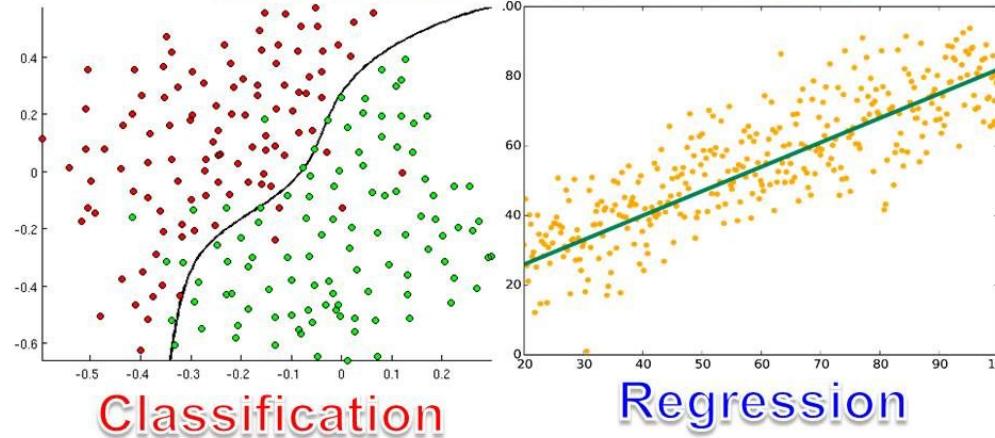




Machine Learning

Supervised learning Classification vs Regression

What is the Difference Between



- Discrete
- Labels
- Learning
- decision
- boundaries

- Continuous
- Numbers
- Learning
- $f(x, y, z) \rightarrow N$



Machine Learning

Supervised learning

- Need data
- Benefits from domain knowledge
- Unreliable on exceptional situation that never occurred before:
 - “Heroes and cowards” during a crisis (fight-or-flight)
 - Financial crisis

=> Very hard to train on unbalanced data

For example anomaly and fraud detection



Machine Learning

Supervised learning In a couple of words

- Data
- Training
- Pattern recognition

Data Task: Data Tagging

Select all applicable tags.



Patterns: Solid ▾
Color: Navy ▾
Material: Dark Wash Denim ▾
Style: Straight Leg ▾

Submit Task

Machine Learning

Supervised learning in the FANGs (Facebook, Amazon, Netflix, Google)

Select all images with cars
Click verify once there are none left

VERIFY

NETFLIX

Home TV Shows Movies Originals Recently Added My List

KIDS DVD 🔍

TV Sci-Fi & Fantasy Featuring a Strong Female Lead >

Continuum

Creator Simon Barry
Cast Rachel Nichols, Victor Webster, Erik Knudsen, Michael Weston, Roger Cross, Lexa Doig, Tony Amato, David Newton, Brian Markinson, Luvia Petersen, Jennifer Spence

Genres TV Shows, Crime TV Shows, TV Documentaries, Crime TV Dramas

This show is Violent, Dark

Member Reviews Continuum is a smart savvy show not surprisingly about time travel. It's also an incisive commentary on the slow loss of privacy and civil liberties that could happen if corporations support the...

this is my first review. I felt compelled to write a review. Do not watch the first episode and think this is some cheap sci-fi series. This is NOT this is complicated show with in depth character...

See all reviews (1463)

Maturity Ratings Parental strongly cautioned. May be unsuitable for children ages 14 and under.

Common Sense Media Rating information for parents: copyright Common Sense Media. All rights reserved.



Bien
Par Marcus69 le 9 juillet 2013

Taille: Large | Achat vérifié
Très beau T-Shirt de qualité. Un seul petit souci, si vous commandez, je vous conseille de prendre une taille en dessous. Taille américaine.

Remarque sur ce commentaire | Une personne a trouvé cela utile. Avez-vous trouvé ce commentaire utile ? Oui Non | Signaler un abus

Louva louva
Par Clément le 26 mai 2013

Taille: Medium | Achat vérifié
Ce t-shirt a changé la vie de celui qui l'a reçu en offrande lors d'une cérémonie de loup hurlant. Son sexe appeal a triplé en moins de 3 seconde, il est passé de jeune loup à chasseur de proie extrême.

Remarque sur ce commentaire | 3 personnes ont trouvé cela utile. Avez-vous trouvé ce commentaire utile ? Oui Non | Signaler un abus

A decorative cluster of six hexagonal icons in various shades of blue and cyan. The icons include a lightbulb, a thumbs-up, a smartphone, a magnifying glass, and two solid blue hexagons.

Machine Learning

Unsupervised learning



Unsupervised clustering

=> Group individuals in a population based on their similarity

- Behaviour
- History
- Comments
- ...
- Customer segmentation
- Targeted marketing
- Recommender system

User Reviews Are a Wealth of Information!

Top Customer Reviews

5★ **Great** This is my first Amazon purchase right off the bat! By mrsjones101 on December 10, 2010

5★ **Great** I love the Vizio Model 32" I just got for my brother. Myself I bought this one for my son. It's a great television, offering two different options. There are 7 standard output from HDMI, component, and DVI, plus there is also a built-in media player. I would highly recommend this television to anyone who is looking for a new television. The price is very reasonable and it's a great buy. I would definitely buy again if I ever need another television. The service has been great and I would highly recommend this store.

1 Comment · Read reviews about this model · Write a review · Report abuse

5★ **Great** Great! By mrsjones101 on December 10, 2010

5★ **Great** I just received my Vizio Model 32" and I am very happy with it. It looks great and the picture is sharp. I would highly recommend this television to anyone who is looking for a new television. The price is very reasonable and it's a great buy. I would definitely buy again if I ever need another television. The service has been great and I would highly recommend this store.

1 Comment · Read reviews about this model · Write a review · Report abuse

5★ **Great** Great! By mrsjones101 on December 10, 2010

5★ **Great** I just received my Vizio Model 32" and I am very happy with it. It looks great and the picture is sharp. I would highly recommend this television to anyone who is looking for a new television. The price is very reasonable and it's a great buy. I would definitely buy again if I ever need another television. The service has been great and I would highly recommend this store.

Richer data than purchasing patterns or click streams:

- Gender
- Relationship
- Age
- Sentiment

Amazon's recommender system

Simplilearn





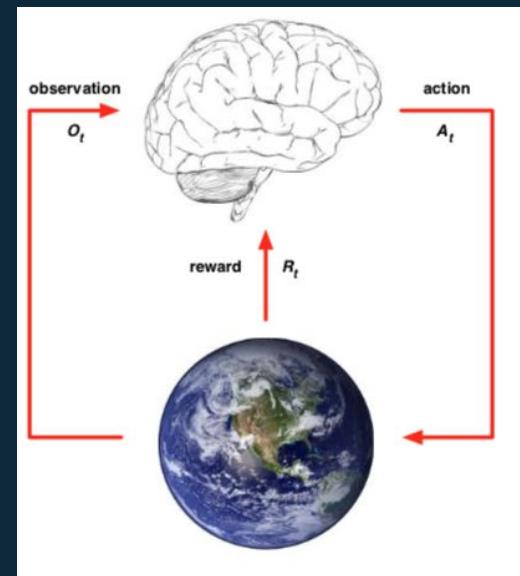
Machine Learning

Reinforcement learning

Machine Learning

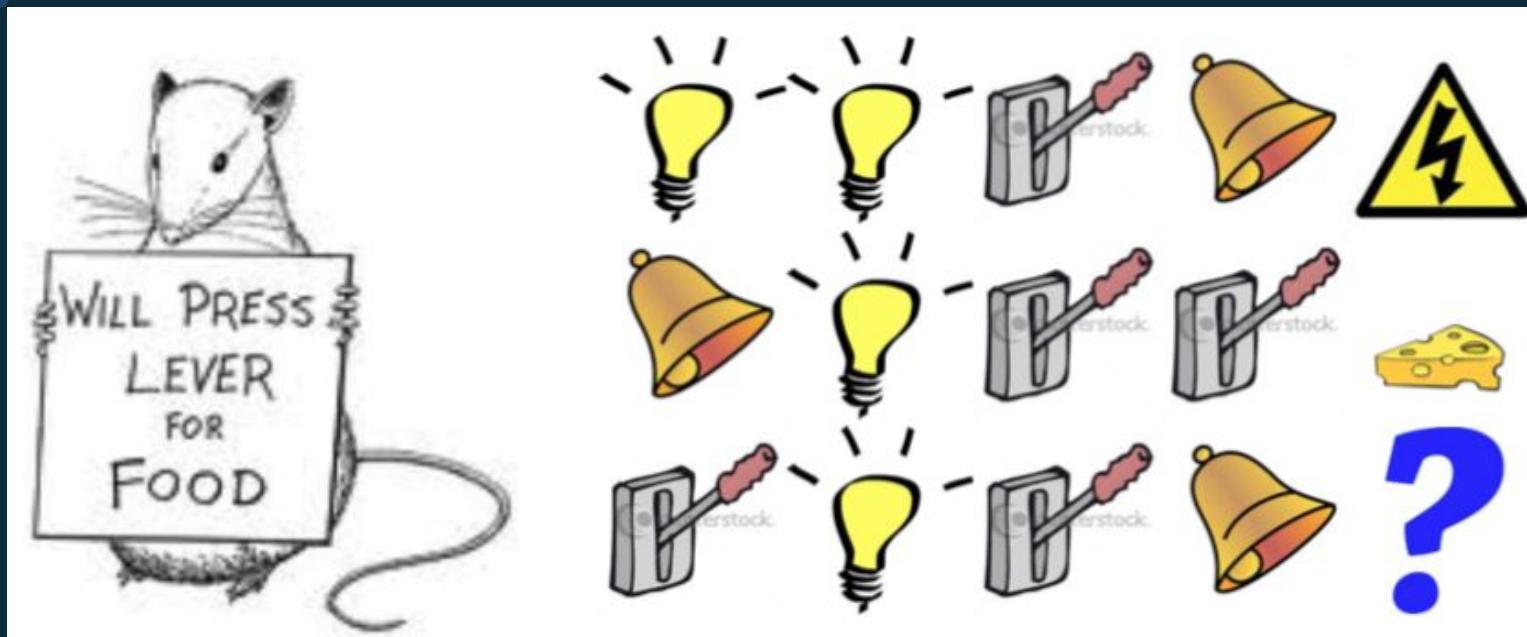
Reinforcement learning

- Agent
- Environment
- Actions
- Reward



Machine Learning

Reinforcement learning





Machine Learning

Reinforcement learning

- Feedback loop Action => Environment
- “Superhuman skills”
 - Learning without being taught
- The algorithm is online, it never stops training
contrary to supervised learning, it doesn’t wait for
Someone to label new samples

Helicopter airshow

2008, Stanford



Hurricane

Alpha Go

2016, Google

Alpha Go Zero

2017, Google

Alpha Zero

December 2018, Google



Reinforcement learning

The AI style

MIT
Technology
Review

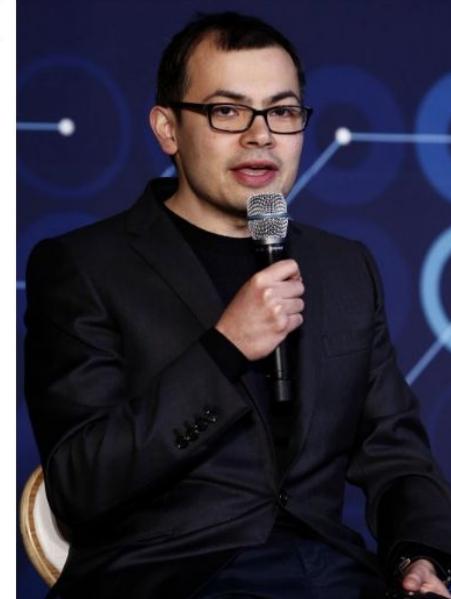
Topics+ The Download Magazine Events More+ [Subscribe](#)

Intelligent Machines

Alpha Zero's "Alien" Chess Shows the Power, and the Peculiarity, of AI

The latest advance from DeepMind behaves in a very surprising way. Expect other AI systems to be just as odd.

by Will Knight December 8, 2017

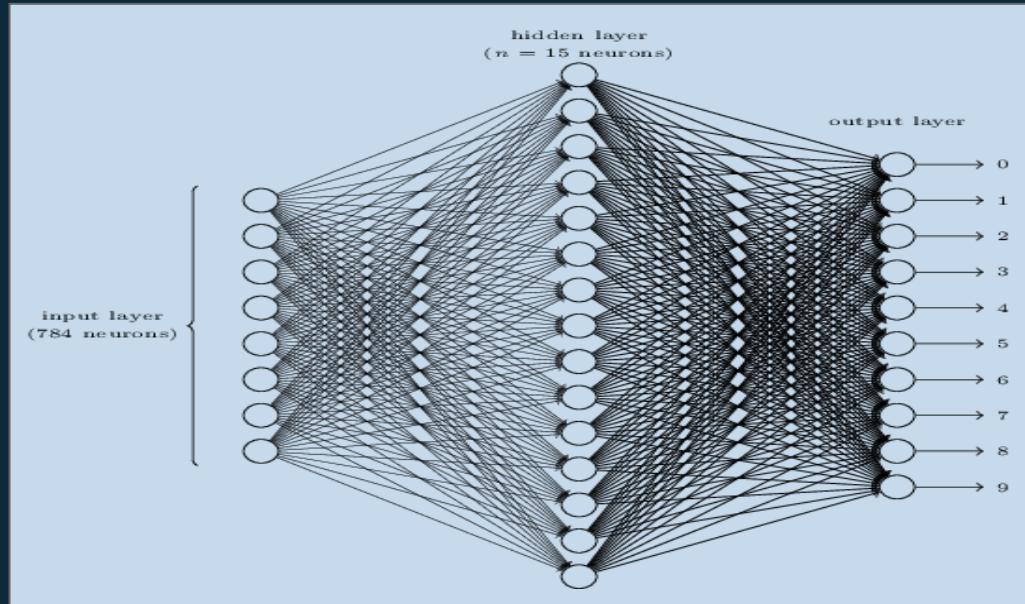


Deep Learning?



Deep Learning

Remember this neural network?

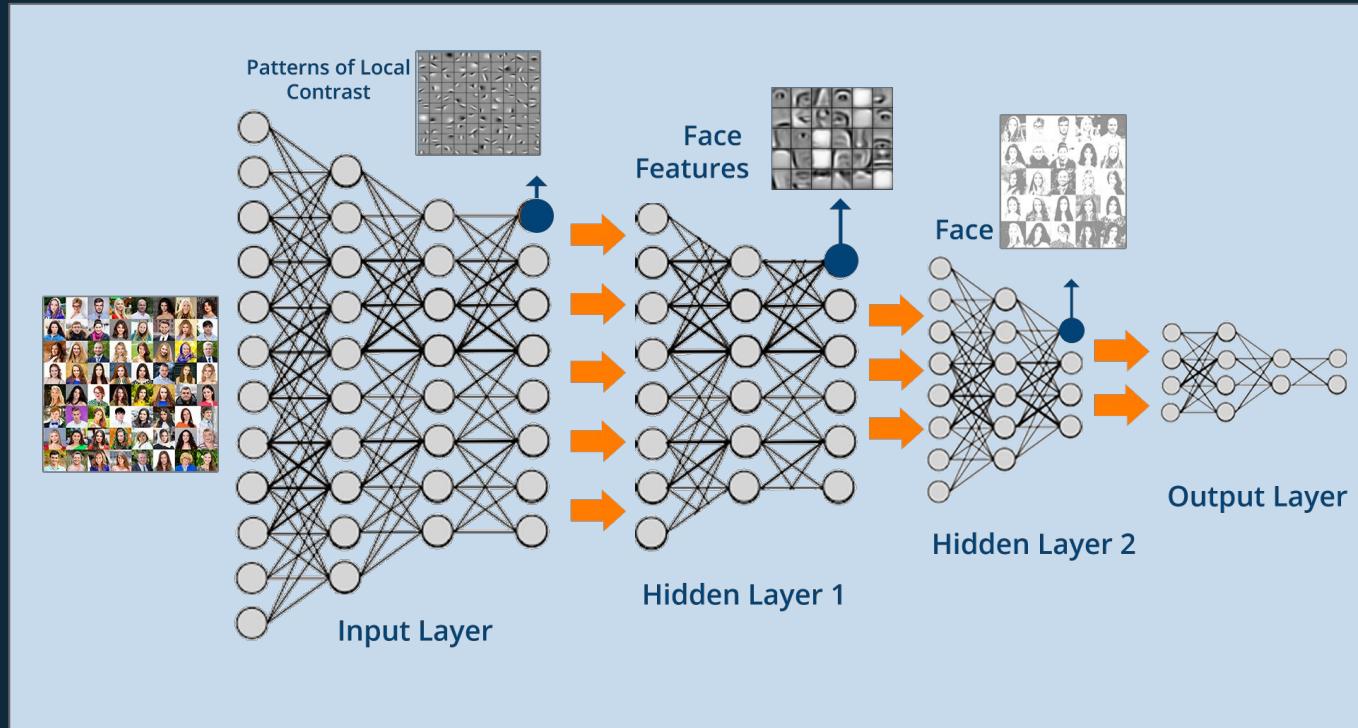


Deep Learning



Deep Learning

Deep convolutional neural network





Deep Learning

- The go-to for perceptive tasks and natural language understanding
- Not the universal panacea

Deep Learning Natural Language Understanding

The New York Times

ECONOMY High-Skilled White-Collar Work? Machines Can Do That, Too

algorithms roam free, however, it is the machine — and not the buyer's gut — that often anticipates what customers will want.



Stitch Fix's business would probably not exist without the use of algorithms. Among other things, they project how many clients will be in a certain situation, or "state," several months in the future, and what volume of clothes people buy in each situation. Christie Hemm Klok for The New York Times

That's the case at Stitch Fix, an online styling service that sends customers boxes of clothing whose contents they can keep or return, and maintains detailed profiles of customers to personalize their shipments.

Stitch Fix relies heavily on algorithms to guide its buying decisions — in fact, its business probably could not exist without them. Those algorithms project how many clients will be in a given situation, or "state," several months into the future (like expanding their wardrobe after, say, starting a new job), and what volume of clothes people tend to buy in each situation. The algorithms also know which styles people with different profiles tend to favor — say, a petite nurse with children who lives in Texas.

Subscribe to With Interest

Deep Learning Natural Language Understanding

<https://www.nytimes.com/2018/07/07/business/economy/algorithm-fashion-jobs.html>

The New York Times

ECONOMY | High-Skilled White-Collar Work? Machines Can Do That, Too

algorithms roam free, however, it is the machine — and not the buyer's gut — that often anticipates what customers will want.



Stitch Fix's business would probably not exist without the use of algorithms. Among other things, they project how many clients will be in a certain situation, or "state," several months in the future, and what volume of clothes people buy in each situation. Christie Hemm Klok for The New York Times

That's the case at Stitch Fix, an online styling service that sends customers boxes of clothing whose contents they can keep or return, and maintains detailed profiles of customers to personalize their shipments.

Stitch Fix relies heavily on algorithms to guide its buying decisions — in fact, its business probably could not exist without them. Those algorithms project how many clients will be in a given situation, or "state," several months into the future (like expanding their wardrobe after, say, starting a new job), and what volume of clothes people tend to buy in each situation. The algorithms also know which styles people with different profiles tend to favor — say, a petite nurse with children who lives in Texas.

Subscribe to [With Interest](#)

Deep Learning

Natural Language Understanding



AllenNLP

Machine Comprehension

Textual Entailment

Semantic Role Labeling

Coreference Resolution

Named Entity Recognition

Constituency Parsing

Dependency Parsing

Open Information Extraction

WikiTableQuestions
Semantic Parser

Cornell NLVR Semantic Parser

Text to SQL (ATIS)

QuaRel Zero

Machine Comprehension

Machine Comprehension (MC) answers natural language questions by selecting an answer span within an evidence text. The AllenNLP toolkit provides the following MC visualization, which can be used for any MC model in AllenNLP. This page demonstrates a reimplementation of [BiDAF](#) ([Seo et al, 2017](#)), or Bi-Directional Attention Flow, a widely used MC baseline that achieved state-of-the-art accuracies on [the SQuAD dataset](#) (Wikipedia sentences) in early 2017.

Enter text or [Choose an example...](#)

Passage

project how many clients will be in a given situation, or “state,” several months into the future (like expanding their wardrobe after, say, starting a new job), and what volume of clothes people tend to buy in each situation. The algorithms also know which styles people with different profiles tend to favor — say, a petite nurse with children who lives in Texas.

Question

How does Stitch Fix business work

RUN >

Answer

an online styling service that sends customers boxes of clothing whose contents they can keep or return, and maintains detailed profiles of customers to personalize their shipments

Passage Context

In the small but growing precincts of the industry where high-powered algorithms roam free, however, it is the machine — and not the buyer’s gut — that often anticipates what customers will want. Stitch Fix’s business would probably not exist without the use of algorithms. Among other things, they project how many clients will be in a certain situation, or “state,” several months in the future, and what volume of clothes people buy in each situation. Credit Christie Hemm Klok for The New York Times Image Stitch Fix’s business would probably not exist without the use of algorithms. Among other things, they project how many clients will be in a certain situation, or “state,” several months in the future, and what volume of clothes people buy in each situation.CreditChristie Hemm Klok for The New York Times That’s the case at Stitch Fix, [an online styling service that sends customers boxes of clothing whose contents they can keep or return, and maintains detailed profiles of customers to personalize their shipments](#). Stitch Fix relies heavily on



Deep Learning

In summary

- The go-to for perceptive tasks and natural language understanding
- Can be used for classic machine learning (classification, regression) or in reinforcement learning
- Not the universal panacea

Data Science





Data Science

Data Scientist in the “pop” culture

“A data scientist is someone who is better at statistics than any software engineer and better at software engineering than any statistician.”



Data Science

Data + Machine Learning + Business sense

⇒ Turn data into business value



Data Science

Business sense?

"I want to improve the sales of my ecommerce platform, people who come at first are anonymous, what can I do to improve the chance they buy something and how?"



Data Science

Business sense?

"We are a financial company, we want to detect anomalies, what metrics do you recommend?"



Data Science

Business sense?

"We are an antivirus company, we want to detect anomalies, what metrics do you recommend?"

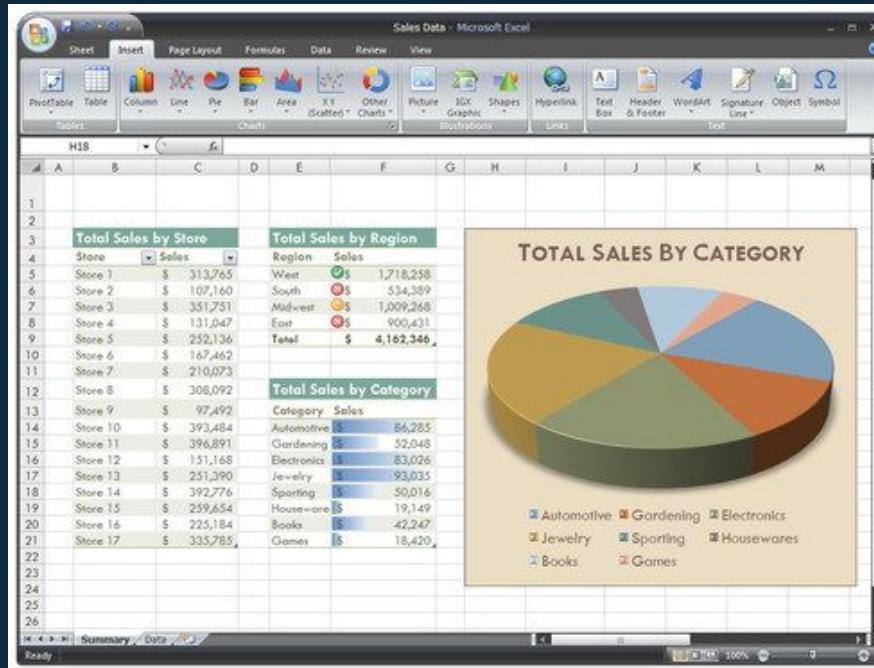


Data Science

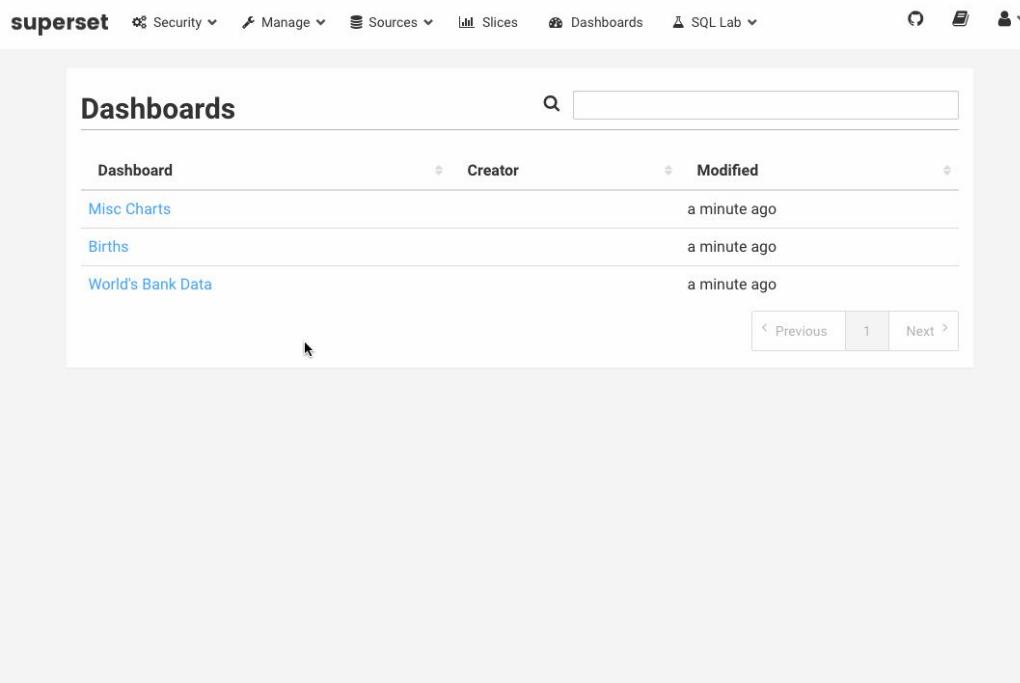
Business value?

Data Science

Business value?



Data Science Business value?



The image shows a screenshot of the Superset application interface, specifically the 'Dashboards' page. The top navigation bar includes links for Security, Manage, Sources, Slices, Dashboards, and SQL Lab. Below the navigation is a search bar. The main content area is titled 'Dashboards' and lists three entries:

Dashboard	Creator	Modified
Misc Charts		a minute ago
Births		a minute ago
World's Bank Data		a minute ago

At the bottom of the list are navigation buttons for 'Previous', '1', and 'Next'.



Keywords & Buzzwords

Big Data

Machine Learning

Neural Network

Artificial Intelligence

Deep Learning

Data Science

Reinforcement
Learning

Singularity



Key takeaways

- ◊ Keywords & Buzzwords
- ◊ How is “Artificial Intelligence” used in Fashion?
- ◊ Business value and limits



Break

Google Style Fashion
What can your clothes
say about you?
April 1st, 2016





2

How can data be used
For Fashion



Top AI country

Professor Laura Alfaro, Harvard Business School. [Course slides.](#)

“France already has one of the strongest AI research communities in the world”, Mark Zuckerberg

[Google, Facebook target Paris as a center for AI Expansion](#), Bloomberg





2.1

Marketing, fashion & Retail

Zoom on France



Marketing – Tinyclues tinyclues•

Product

“Jane is 15 times more likely to buy the high-end smartphone that you’re promoting today”

Qui.snCF
+115%

PriceMinister
Rakuten group
+53%

LACOSTE
+151%

How?

- Look-alike (clustering)
- Customer attributes
- Transaction history
- Product Catalog
- Campaign history
- Browsing history

fnac
+30%

vente-privee
Cdiscount
CORSAIR





Fashion – Heuritech



heuritech

Product

- Understand your customer and the perceived positioning
- Boost e-commerce sales



How?

- Social networks:
Who? How? When?
- Trend detection
- Visual tagging and search.
- Image/look based recommendation





Retail - Daco



Product

- Competition landscape
- Pricing
- Discount strategy
- Stock & predictive demand

How?

- Scraping daily your competitors e-commerce store
- Detecting trends
- Visual recognition of the product
- Understanding the pricing and the positioning



2.2

Use cases

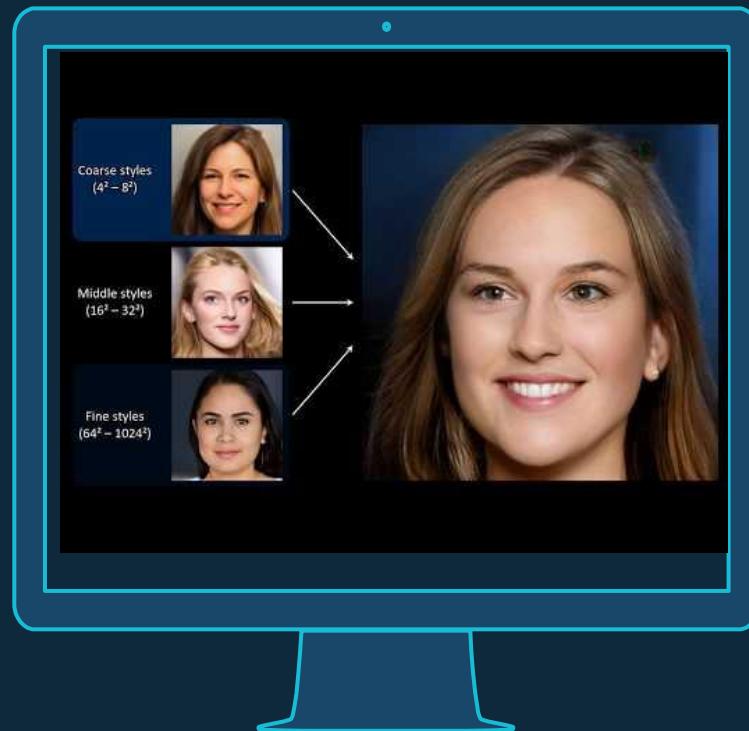
Image synthesis



Remember this video?

StyleGAN

Nvidia, dec 2018





Remember this video?

HiRes Image Synthesis

Nvidia, June 2018





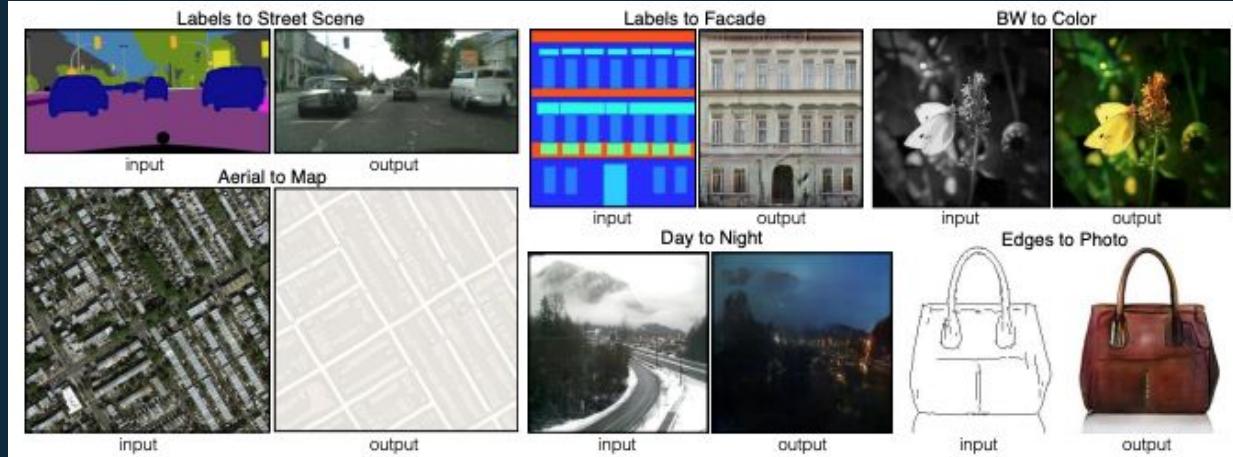
Image to image

Pix2pix neural network

Isola et al, Nov 2016

Online demo (with cats, shoes and bags)

<https://affinelayer.com/pixsrv/>



2.2

Use cases

Recommender system and online advertising



Recommender system And online advertising

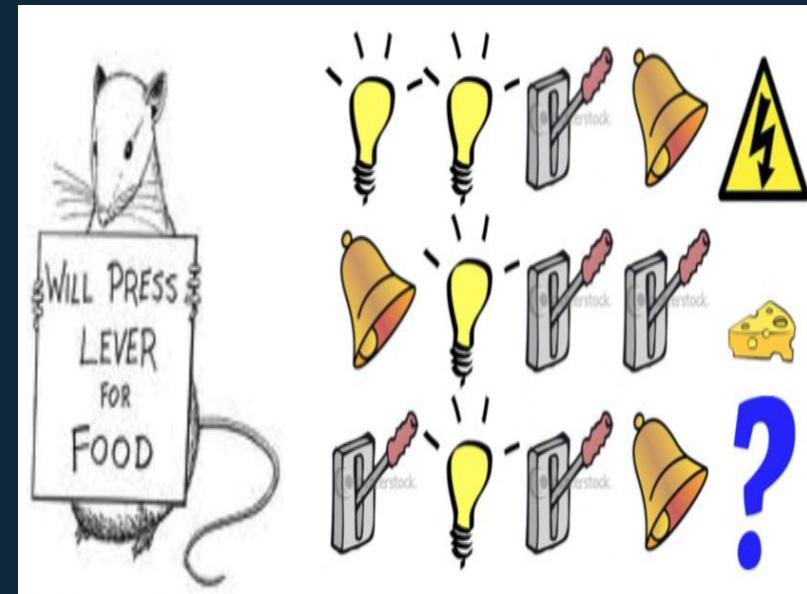
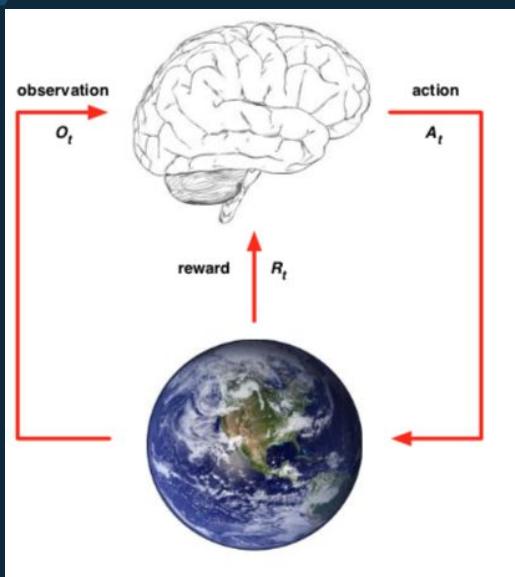
What if you have an unique flash event that happens to your brand or the world?

- Remember it's hard to train for unique

What if your system could take action and get a reward from an environment?

- What form could that reward be?

Recommender system





Real time sponsored ads bidding

Cai et al, Jan 2017

Alibaba, Aug 2018



2.2

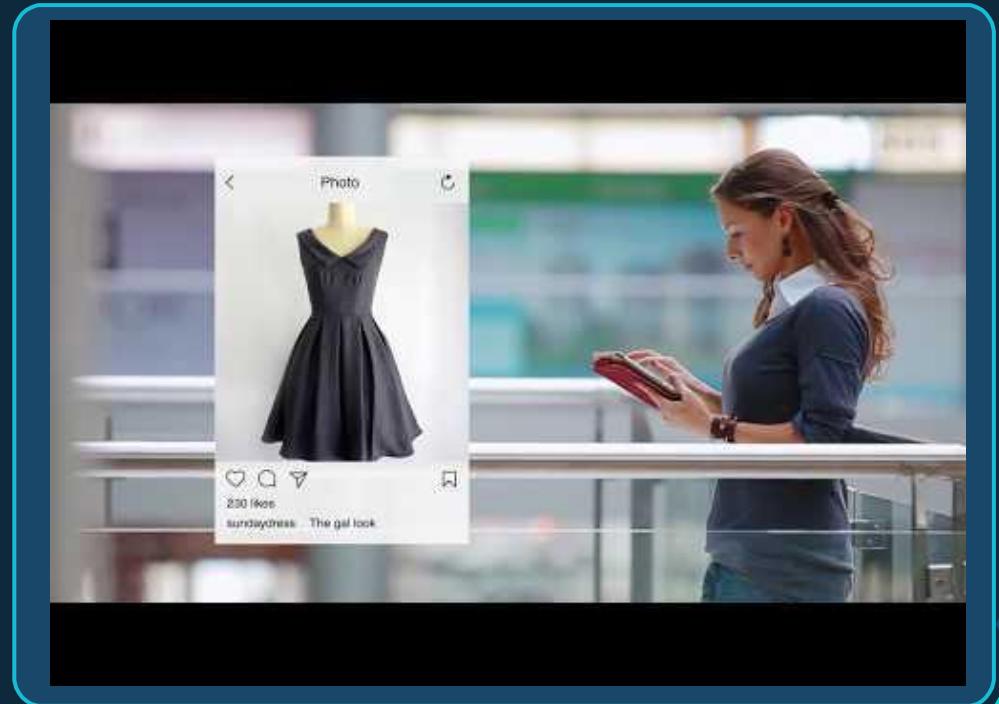
Use cases

Tailoring your experience



Visual Search

Visenze





Clothes fitting

3DLook





Conversational Marketing L'Oréal & Automat





Recap of use cases

Creativity

- Image synthesis
- Image/doodles to image
- Text to image
- Image to text
- Designer for fast Fashion

Marketing

- Trends
- Competitors
- Customer segmentation
- Online advertising

User experience

- Visual search
- Clothes fitting
- Conversational marketing
- Shopping recommendation
- Wear suggestion



3

Business values and limits



Beyond the applications

- ◊ It augments us
- ◊ It works tirelessly 24/7
- ◊ It's biased, but the bias does not depend on its mood



Beyond the applications

- ◊ It's hard to explain (but are our decisions and emotions easy?)
- ◊ It's foreign and different
- ◊ What if lives are at stake?



Will it replace us?

<https://www.nytimes.com/2018/07/07/business/economy/algorithm-fashion-jobs.html>

“There is at least one area of the industry where the machines are creating jobs rather than eliminating them, however. Bombfell, Stitch Fix and many competitors in the box-fashion niche employ a growing army of human stylists who receive recommendations from algorithms about clothes that might work for a customer, but decide for themselves what to send.”

“If I’m the customer explaining what I want, humans need to be involved,” Mr. Khatua said. “Sometimes I don’t know what I really want.”

“In this, stylists appear to reflect a broader trend in industries where artificial intelligence is automating white-collar jobs: the hiring of more humans to stand between machines and customers.

For example, Chida Khatua, the chief executive of EquBot, which helped create an exchange-traded fund that is actively managed by artificial intelligence, predicted that the asset-management industry would hire more financial advisers even as investing became largely automated.

[...]

And these jobs may be hard to automate in the end.”



Thoughts, reactions
Questions & discussion

Bonus

FRIDAY, 25.01.2018		
8:00 Registration		
9:00 Opening speech - Maria Parysz , CEO & co-founder (LogicAI) and Pawel Jankiewicz , CTO & co-founder (LogicAI)		
9:30 Key Note speaker - Anthony Goldbloom , CEO (Kaggle)		
10:00 Key Note speaker - Ian Rogers , Chief Digital Officer (LVMH)		
10:10 Key Note speakers - Leslie Serrero , SVP Global Client Development, Marketing & E-retail (Christian Dior Couture), Ludovic Watine , E-retail Director (Christian Dior Couture) and Isabelle Faggianelli , VP Digital Transformation HR (Christian Dior Couture & LVMH)		
PRESENTATIONS - MASTER STAGE		
WORKSHOPS - TECHSHOP ROOM		
BRAINSTORMING SESSIONS		
10:30 Alberto Danese ML Interpretability: the key to widespread ML adoption in the enterprise	10:30 Darius Barusauskas NCAA March Madness competition - 1st place model approach	
11:15 Konstantin Lopukhin Explainable neural networks for image and text		
12:00 Lunch		
13:00 Jean-Francois Puget Beyond feature engineering and HPO	13:00 Luca Massaron & Pietro Marinelli Competitive GBDT specification and optimization workshop	13:00 Christian Dior Couture Bruno Valette, Philippe Dagher, Pawel Jankiewicz One-timers - how to analyze customers with one transaction?
13:45 Paul Deveau Understanding humans: from cells to marketing using data science		14:00 Louis Vuitton Bruno Guillet, Wojtek Rosinski HE + AI: learn from both Data and Human Expertise (HE) to strengthen AI algorithms in luxury use cases
14:30 Stanislav Semenov Tips and tricks for machine learning	14:30 Pavel Pleskov Dirty tricks for image classification	15:00 Sephora Clement Marchal, Philippe Dagher Building competitive advantage by discount personalization
15:15 Darius Barusauskas My journey to becoming a Kaggle Grandmaster and how I turned Kaggle success into a startup		
16:00 Afternoon break		
16:30 Carey Chou, Paweł Jankiewicz, Wojciech Rosiński Apply the Taste of Music to Fashion	16:30 Pavel Ostyakov How to win competitions, spending the minimum amount of time	
17:15 Gabor Fodor Kaggle Kernels: Why I think Kaggle is more than "just" being the best data science competition platform		
18:00 Closing remarks, competition announcement		
SATURDAY, 26.01.2018		
COMPETITION		
MENTORING HOURS WITH GRANDMASTERS /45 MIN./		
7:30 Registration	9:00 Paweł Jankiewicz, Konstantin Lopukhin	
8:00 Opening speech for competition - Maria Parysz and Paweł Jankiewicz (LogicAI)	10:00 Stanislav Semenov	
8:30 Competition	11:00 Luca Massaron, Pietro Marinelli	
12:00 Lunch	13:00 Alberto Danese, Mikel Bober-Irizar	
12:45 Competition	14:00 Gabor Fodor	





Thank you!

I am Mamy Ratsimbazafy

I'm a freelance Data Scientist and an Ethereum & Blockchain researcher.

You can contact me at mamy@numforge.co

+33 6 67 85 86 54

<https://www.linkedin.com/in/mamyratsimbazafy>





Bonus:

Fake Obama speech by a neural network:

<https://www.youtube.com/watch?v=dkoi7sZvWiU>

Shakespeare-like play by a neural network “God save my son”: <https://www.youtube.com/watch?v=NGW0tKbEfpg>

