Intro to data science

Development, use cases, and prospect

January 24, 2018
Thammasat University

Chatdanai Lumdee (Tua/ตั๊ว)
Data scientist at Kasikorn Labs, Kasikorn Business-Technology Group
(and a physicist -- optics, nanotechnology)

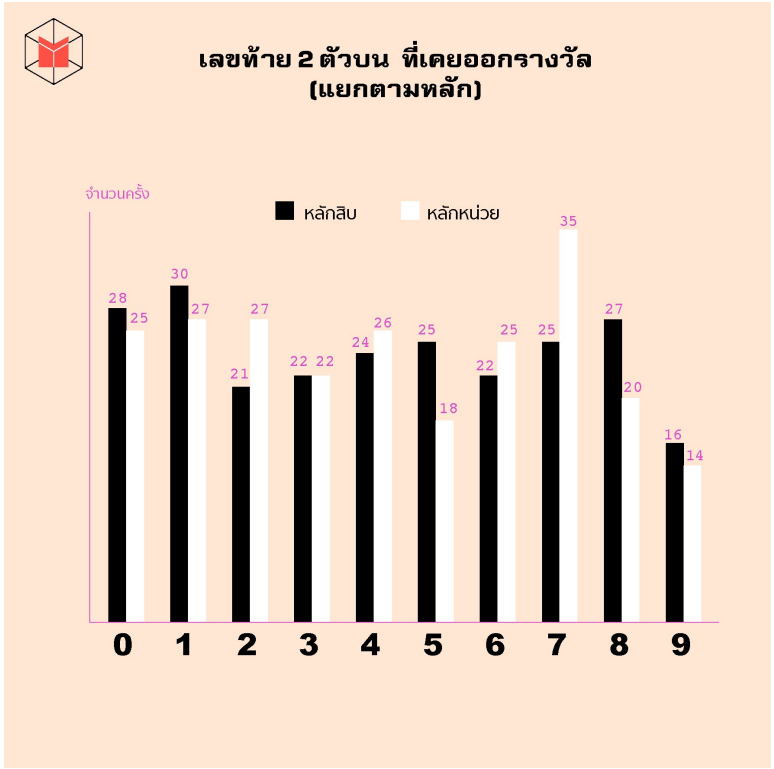
Intro to data science

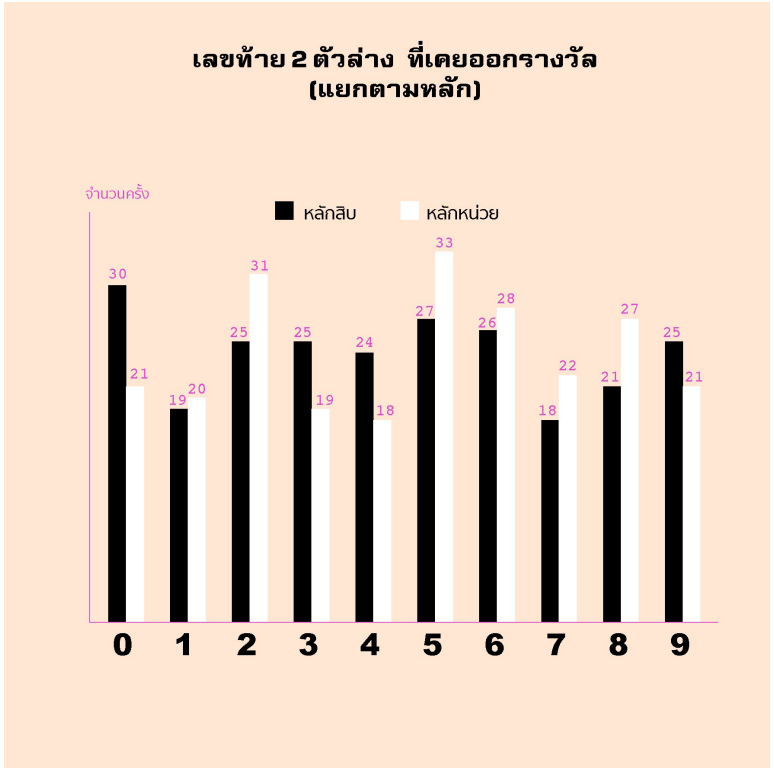
Development, use cases, and prospect

สลากกินแบ่งรัฐบาล
THAI GOVERNMENT LOTTERY
Happy New Year's Day
17 มกราคม 2559
17 JANUARY 2016
908668
835385
342809
853746
284

เล่น(กับ)หวย ด้วยสถิติ : สำรวจหวยไทยในรอบ 10 ปี

SEPTEMBER 16, 2017 *by* THANISARA GG RUANGDEJ





https://thematter.co/pulse/lottery/34916

WHAT IS ACTUARIAL SCIENCE

"It's about calculating money-related risks"

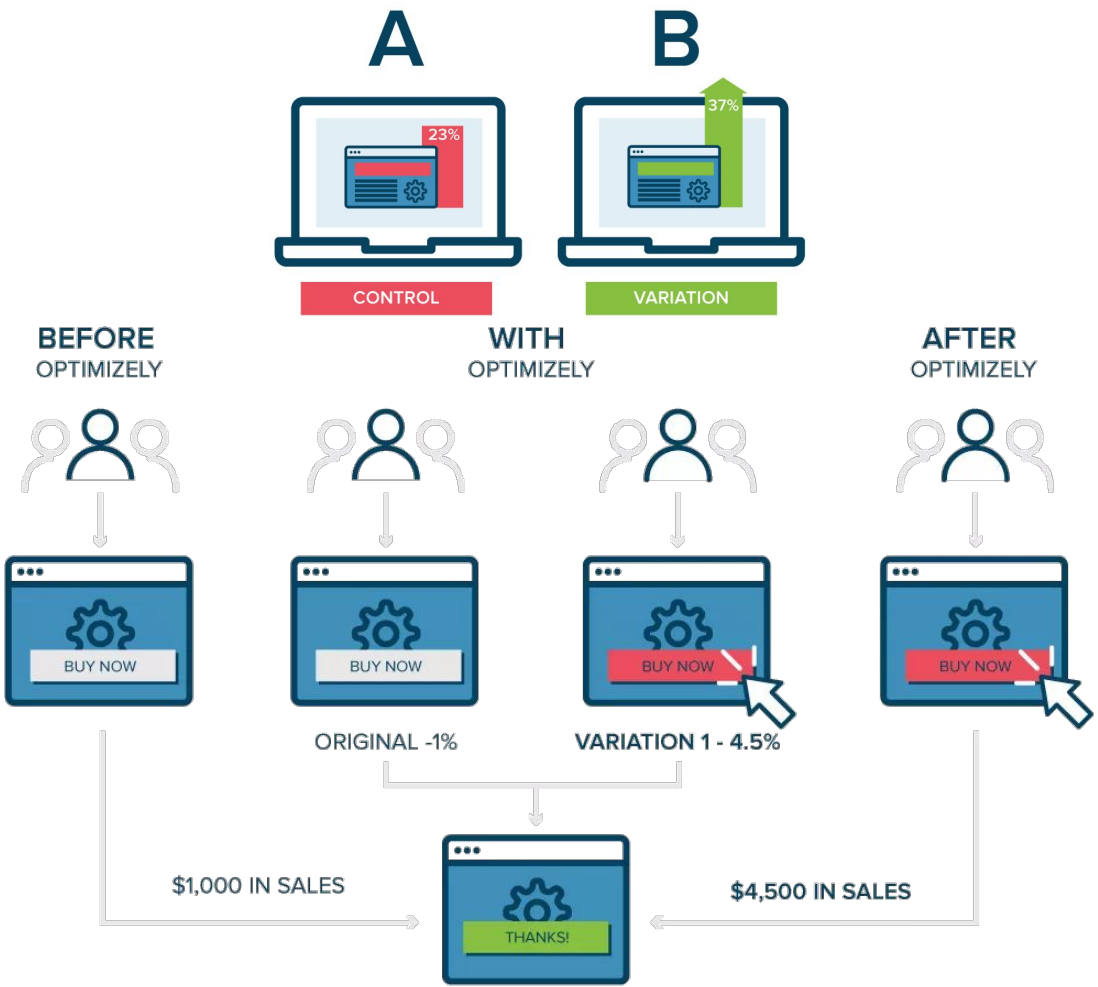
Actuarial science involves:

- Statistics
- Probability
- Knowledge of Business & Economics

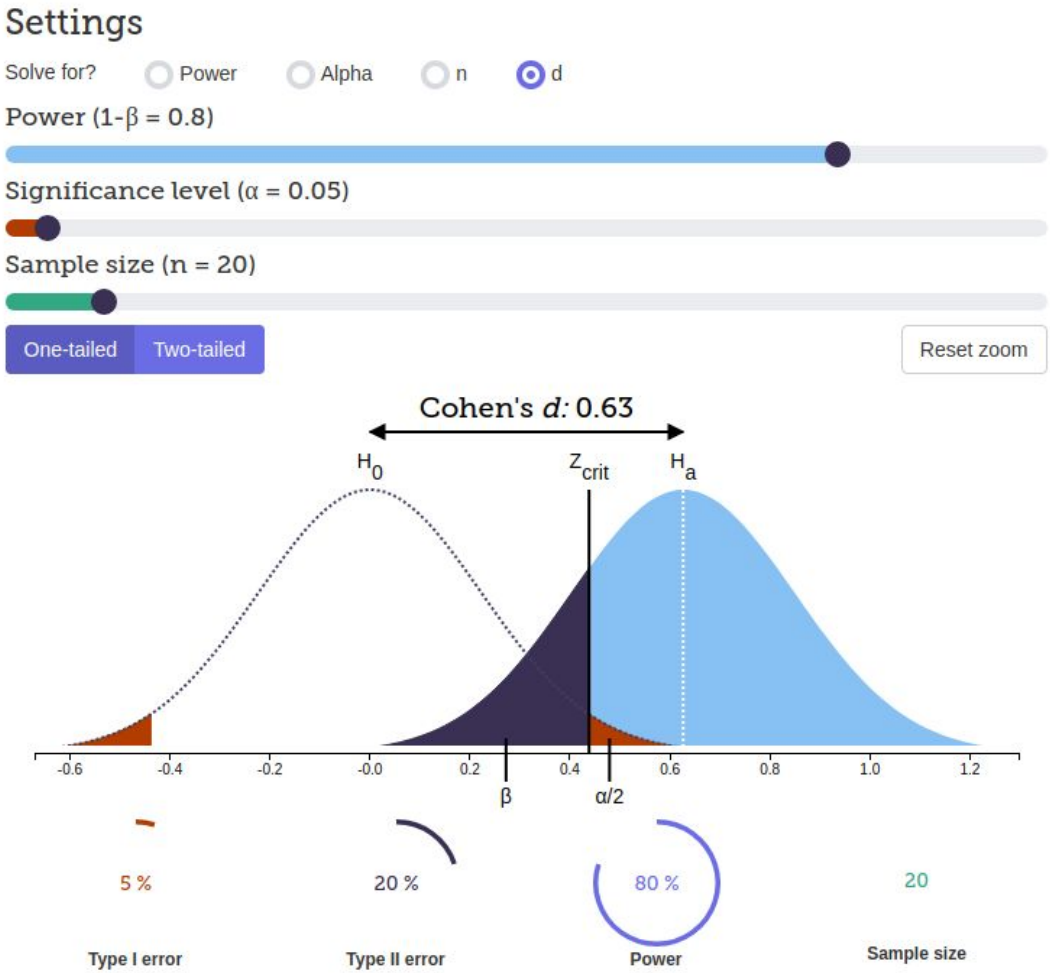
… to make sound business decisions

Example:

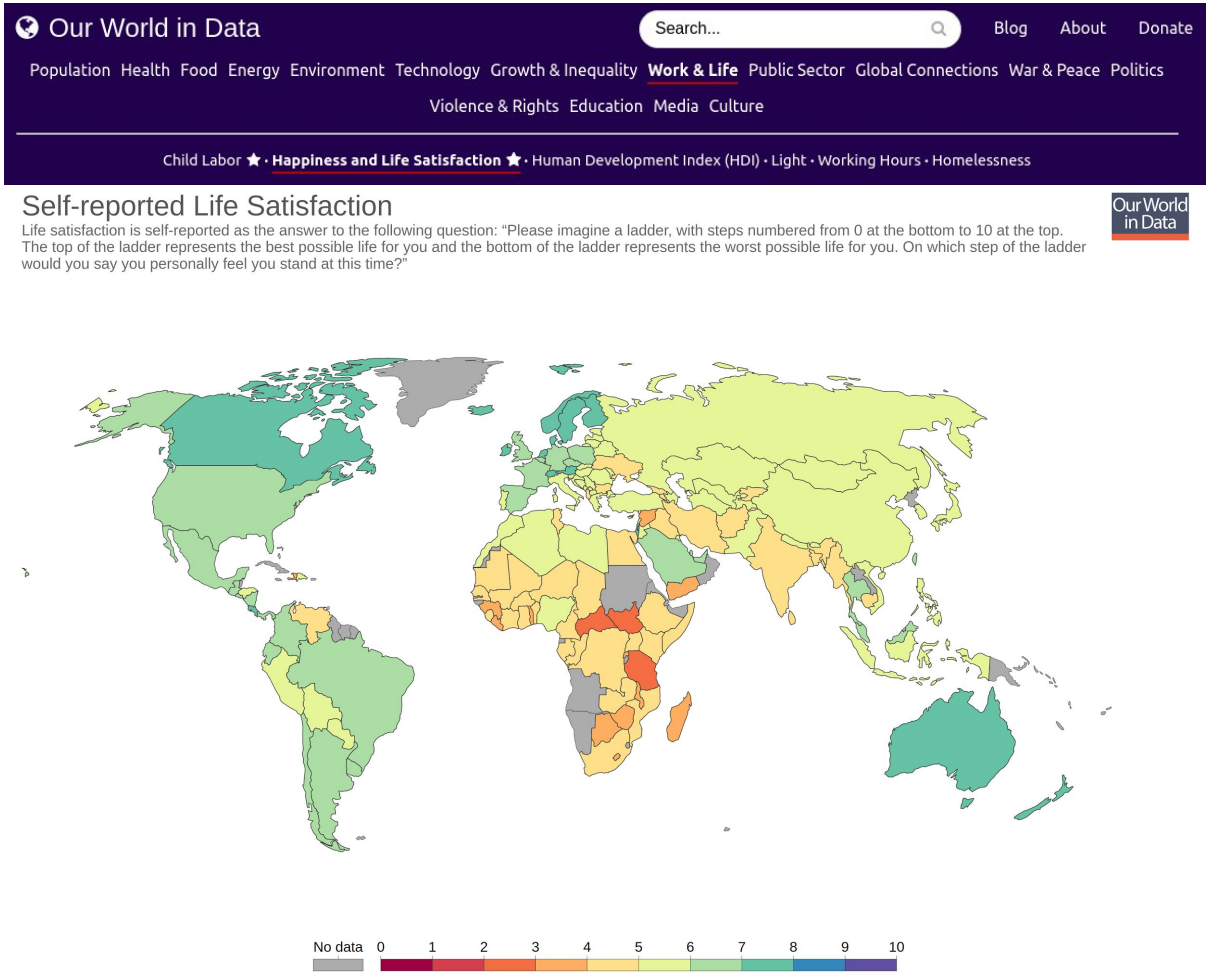
The amount that you must pay for your insurance plan is calculated by an actuary!



https://www.optimizely.com/optimization-glossary/ab-testing/

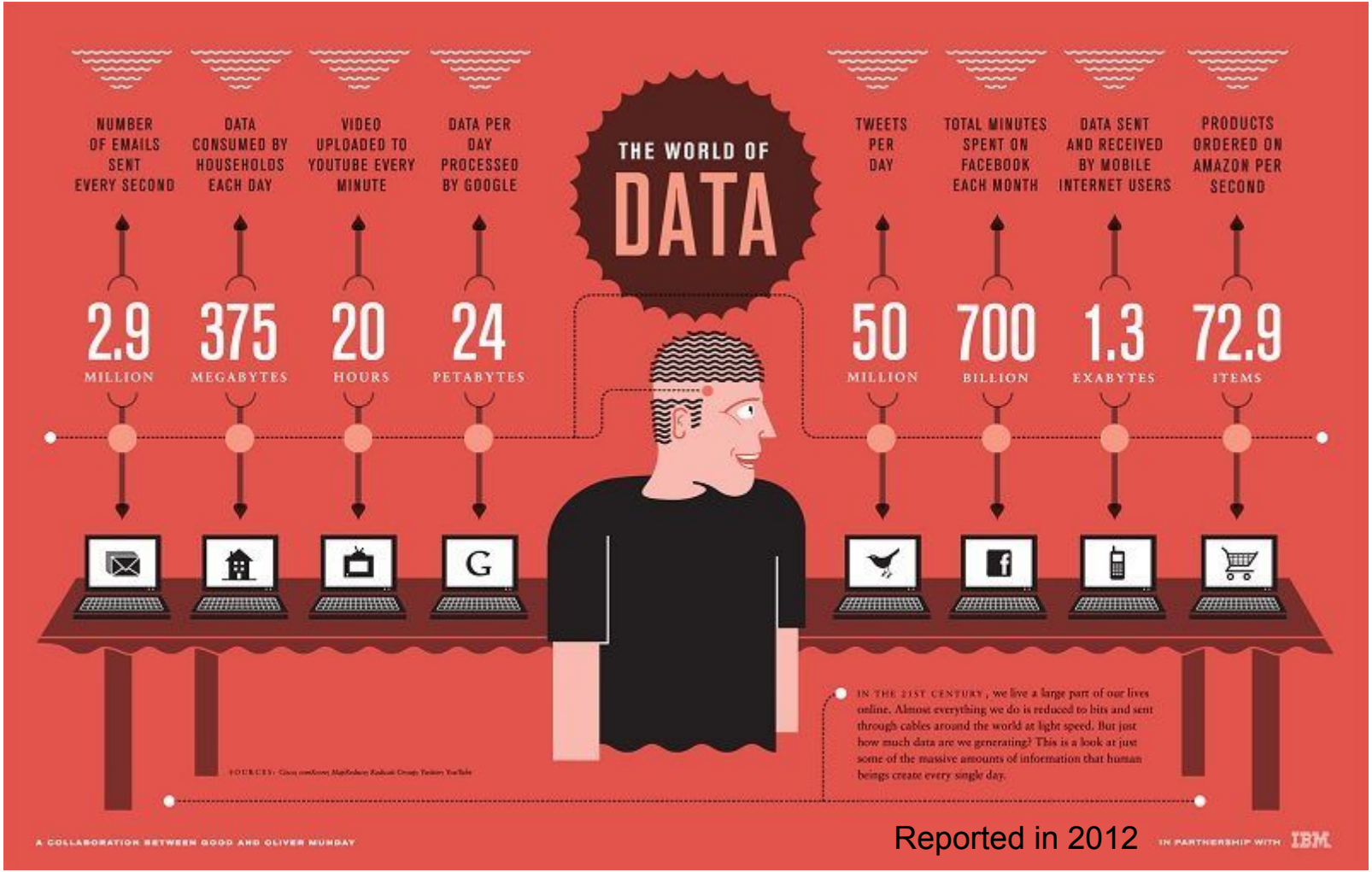


http://rpsychologist.com/d3/NHST/



https://ourworldindata.org/

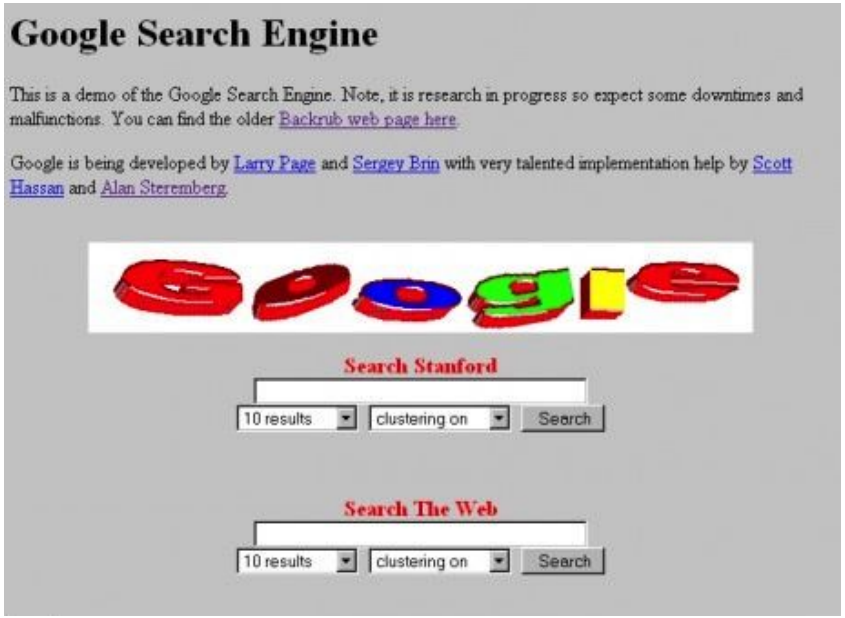
BIG DATA

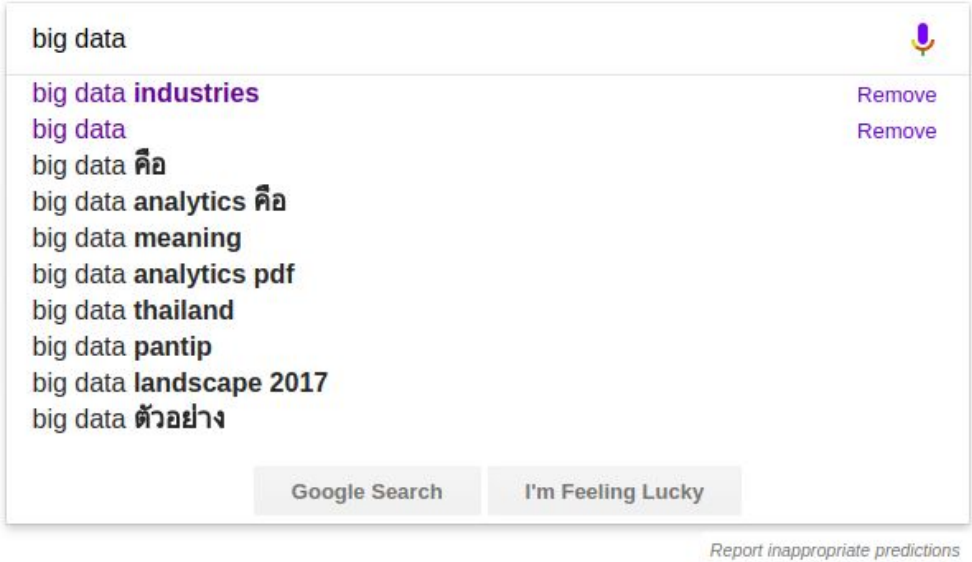


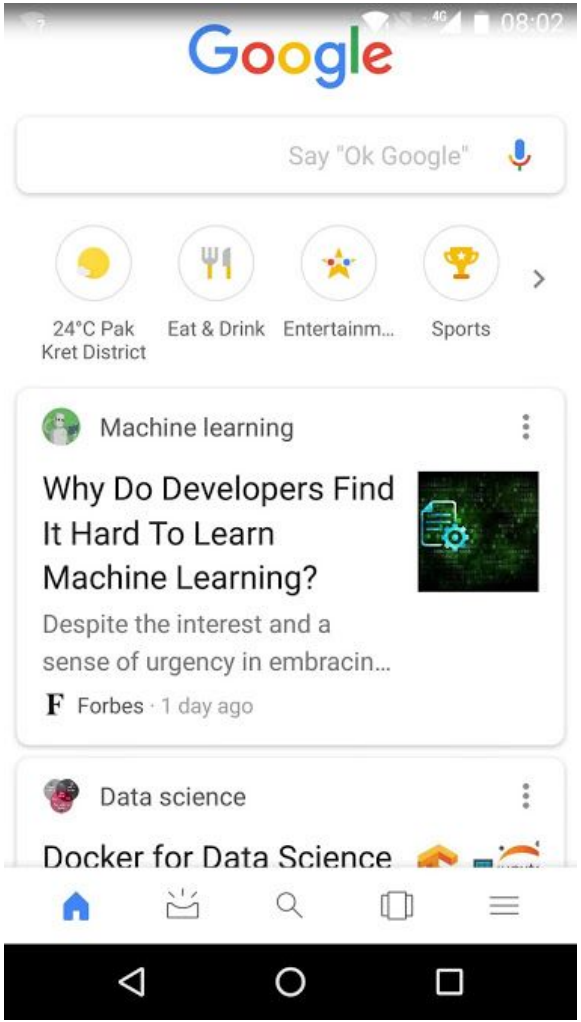
Reported in 2012

Beginning (~1996)

Now






Google
Say "Ok Google"
24°C Pak
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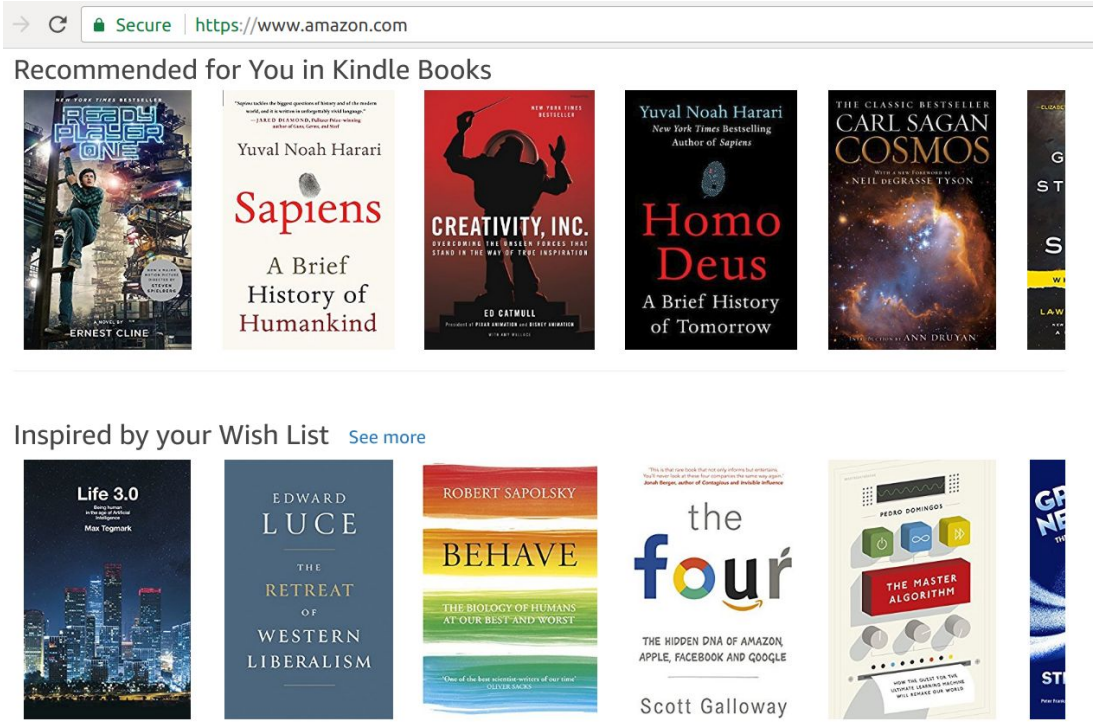
Eat & Drink
Entertainm...
Sports
Machine learning
Why Do Developers Find It Hard To Learn Machine Learning?
Despite the interest and a sense of urgency in embracin...
Forbes · 1 day ago
Data science
Docker for Data Science


Secure
https://www.amazon.com
Recommended for You in Kindle Books
READY PLAYER ONE
ERNEST CLINE
Yuval Noah Harari
Sapiens
A Brief History of Humankind
CREATIVITY, INC.
ED CATMULL
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Homo Deus
A Brief History of Tomorrow
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ANN DRUYAN
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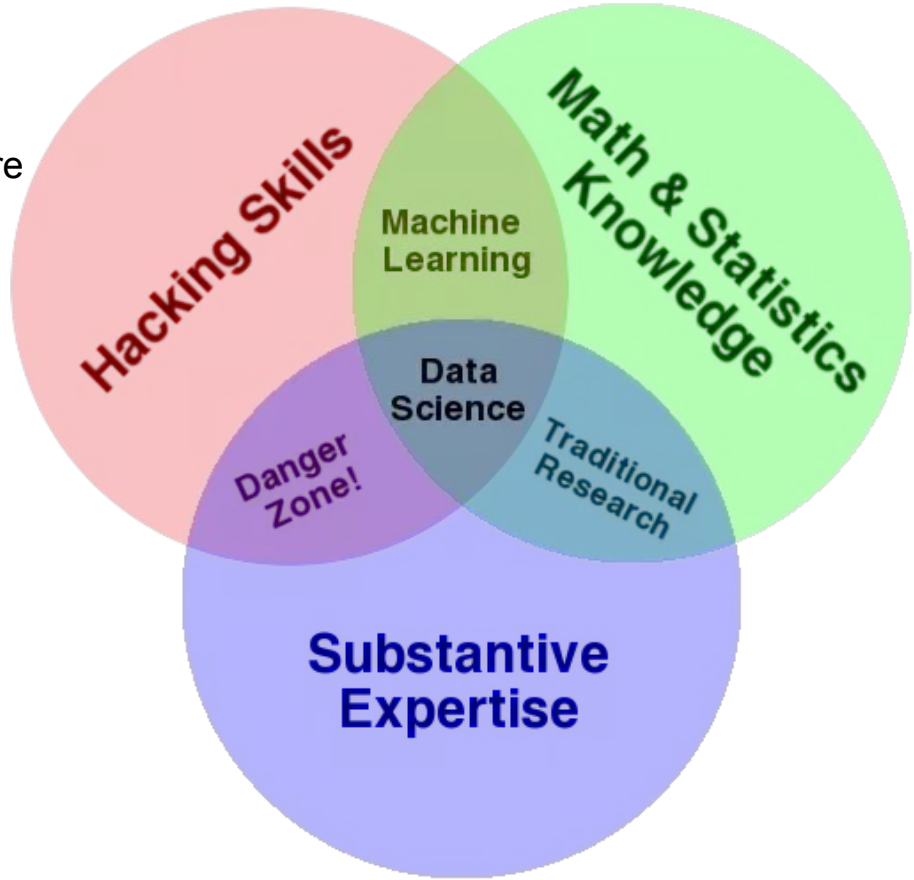
Max Tegmark
EDWARD LUCE
THE RETREAT OF WESTERN LIBERALISM
ROBERT SAPOLSKY
BEHAVE
THE BIOLOGY OF HUMANS AT OUR BEST AND WORST
the four
THE HIDDEN DNA OF AMAZON, APPLE, FACEBOOK AND GOOGLE
Scott Galloway
PEDRO DOMINGOS
THE MASTER ALGORITHM

Coding
Database
Infrastructure



CROSS SELLING & UP SELLING
RECOMMENDATION ENGINE
PURCHASE LIKELIHOOD
ATTRIBUTION MODELLING
CHURN ANALYTICS
PRICING ANALYTICS
CUSTOMER ANALYTICS
MARKETING MIX MODEL
DEMAND FORECASTING
CUSTOMER, STORE AND PRODUCT SEGMENTATION
RETAIL ANALYTICS
Market Basket Analysis
Collaborative Filtering
Propensity Model
Markov Chain Monte Carlo (MCMC)
Survival Analysis
Optimization Techniques
RFM Analysis
Panel Data Regression
Multivariate Time Series Models
Cluster Analysis
Source:
www.tuhinchattopadhyay.com

Finance

Retail

Health

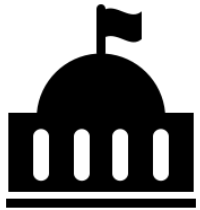
Media

Sports

Logistics

Education

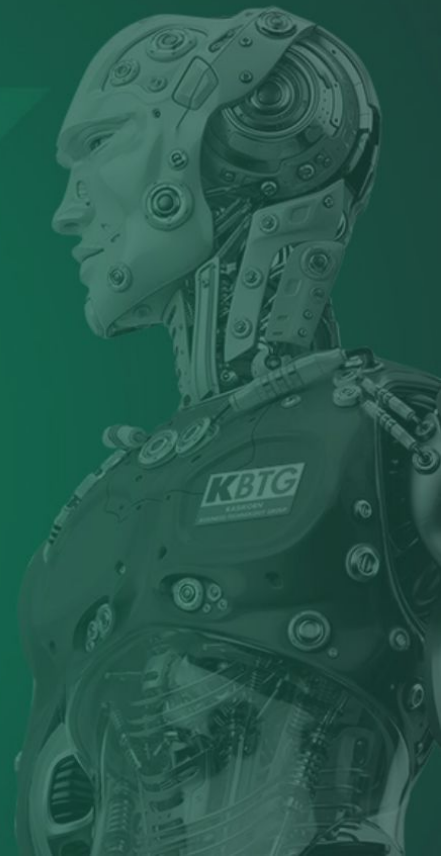
Government



https://www.datameer.com/product/industries-use-cases/
https://datafloq.com/read/8-industries-benefit-big-data-infographic/402
https://www.simplilearn.com/big-data-applications-in-industries-article

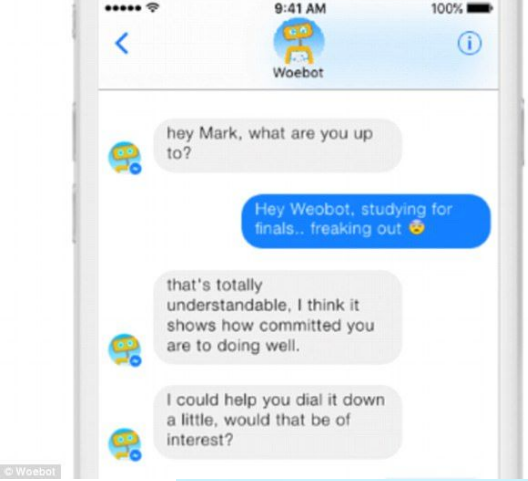
KBTG
KASIKORN
BUSINESS-TECHNOLOGY GROUP

เทคโนโลยี และบริการ



https://blog.walmart.com/innovation/20170807/5-ways-walmart-uses-big-data-to-help-customers

INTRODUCING
amazon go



Harvard Business Review

ANALYTICS

How Machine Learning Is Helping Us Predict Heart Disease and Diabetes

by Yannis Paschalidis

MAY 30, 2017

BIG
DATA

NE PRENEZ PAS LE RISQUE
DE VOIR LA MORT EN FACE
TRAVERSEZ EN RESPECTANT LES FEUX DE SIGNALISATION
vocativ

https://www.cio.com/article/2377954/data-management/data-management-8-ways-big-data-and-analytics-will-change-sports.html

https://www.cio.com/article/2377954/data-management/data-management-8-ways-big-data-and-analytics-will-change-sports.html

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https://datafloq.com/read/big-data-will-revolutionize-learning/206

https://www.reuters.com/article/us-india-technology-development/poor-nations-need-help-to-use-big-data-to-tackle-disease-poverty-expert-idUSKBN19V0UO

Privacy

BIG BROTHER IS
WATCHING YOU

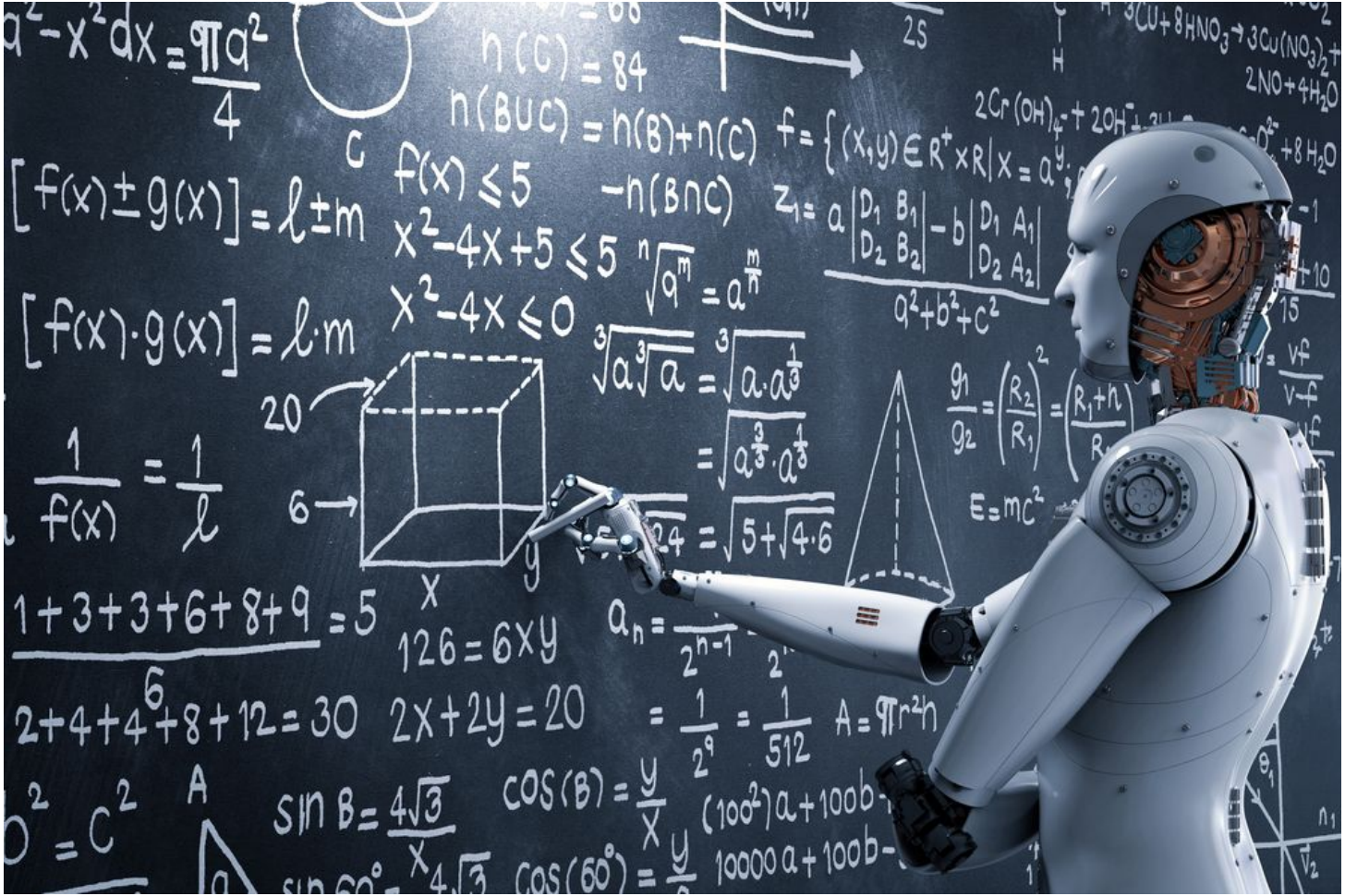
BIG BROTHER IS
WATCHING YOU

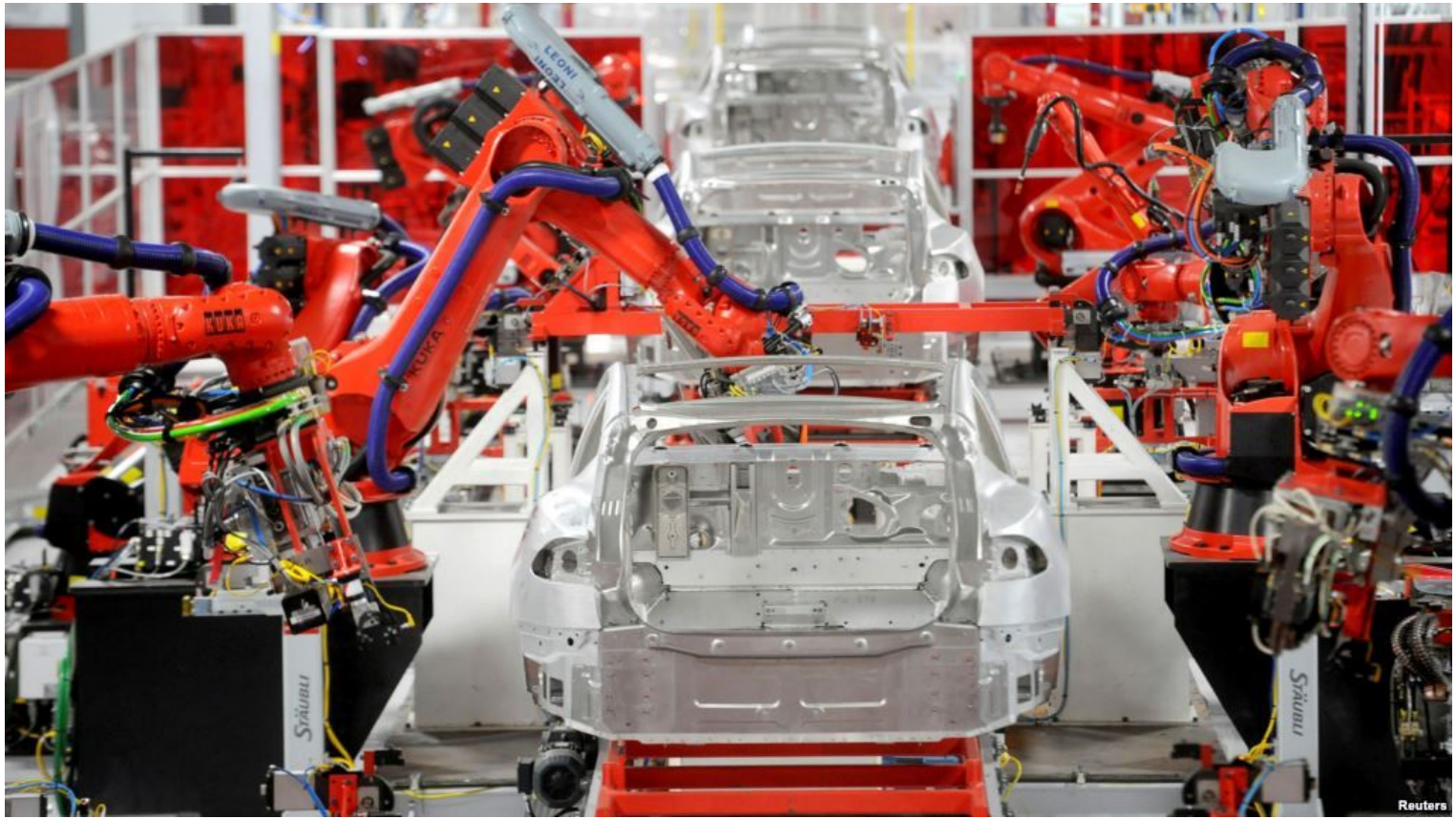
Intro to data science

Development, use cases, and prospect

Intro to data science

Development, use cases, and prospect

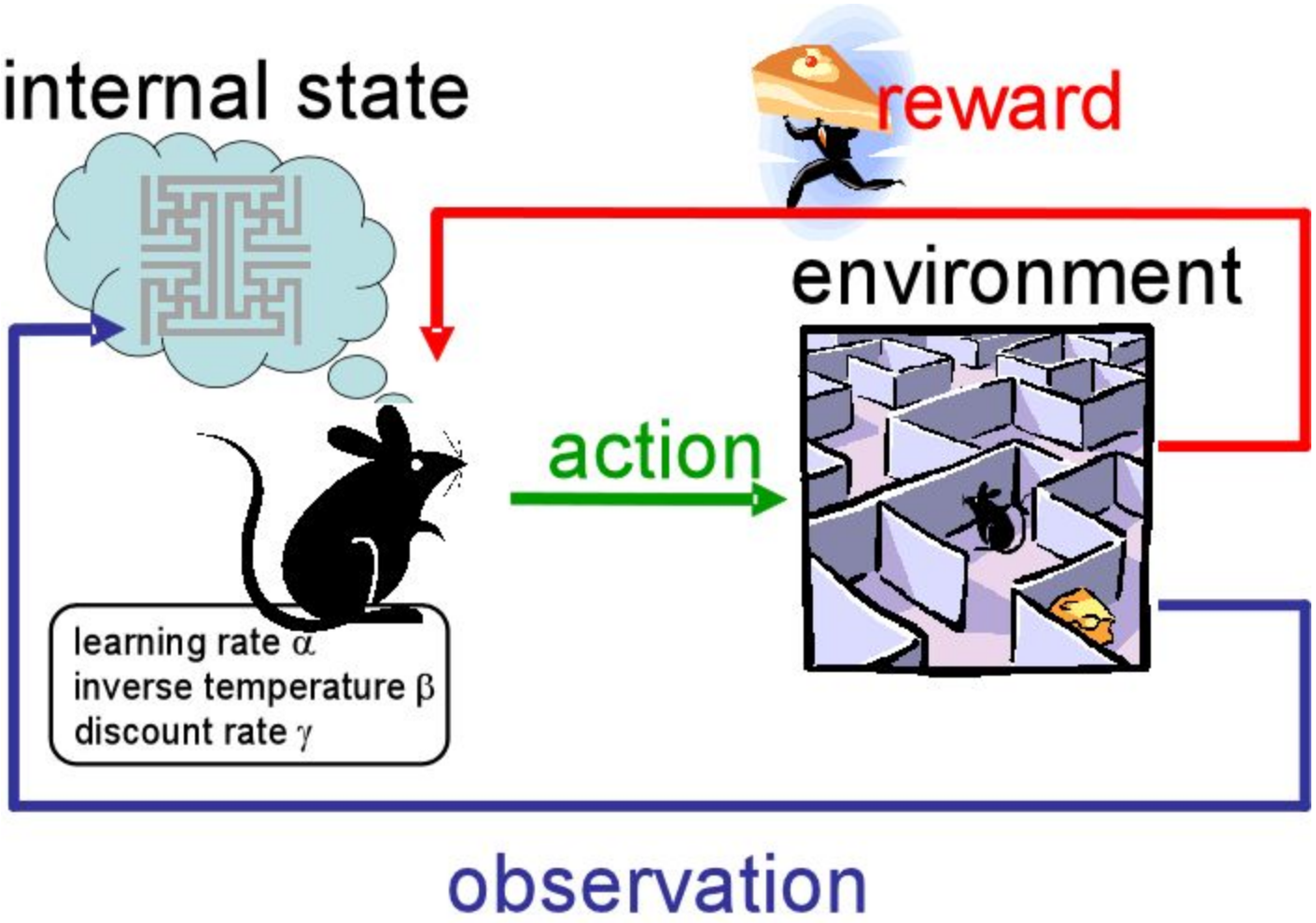




https://www.voanews.com/a/tesla-model-3-assembly-line-strategy/3823841.html

https://www.scientificamerican.com/article/20-years-after-deep-blue-how-ai-has-advanced-since-conquering-chess/

https://www.engadget.com/2017/05/25/google-alphago-ai-deepmind-ke-jie-go-win/


internal state
reward
environment
action
learning rate α
inverse temperature β
discount rate γ
observation

THINK
DENKE
$24,000
Who is Stoker?
((FOR ONE WELCOME OUR NEW COMPUTER OVERLORDS)
$ 1,000
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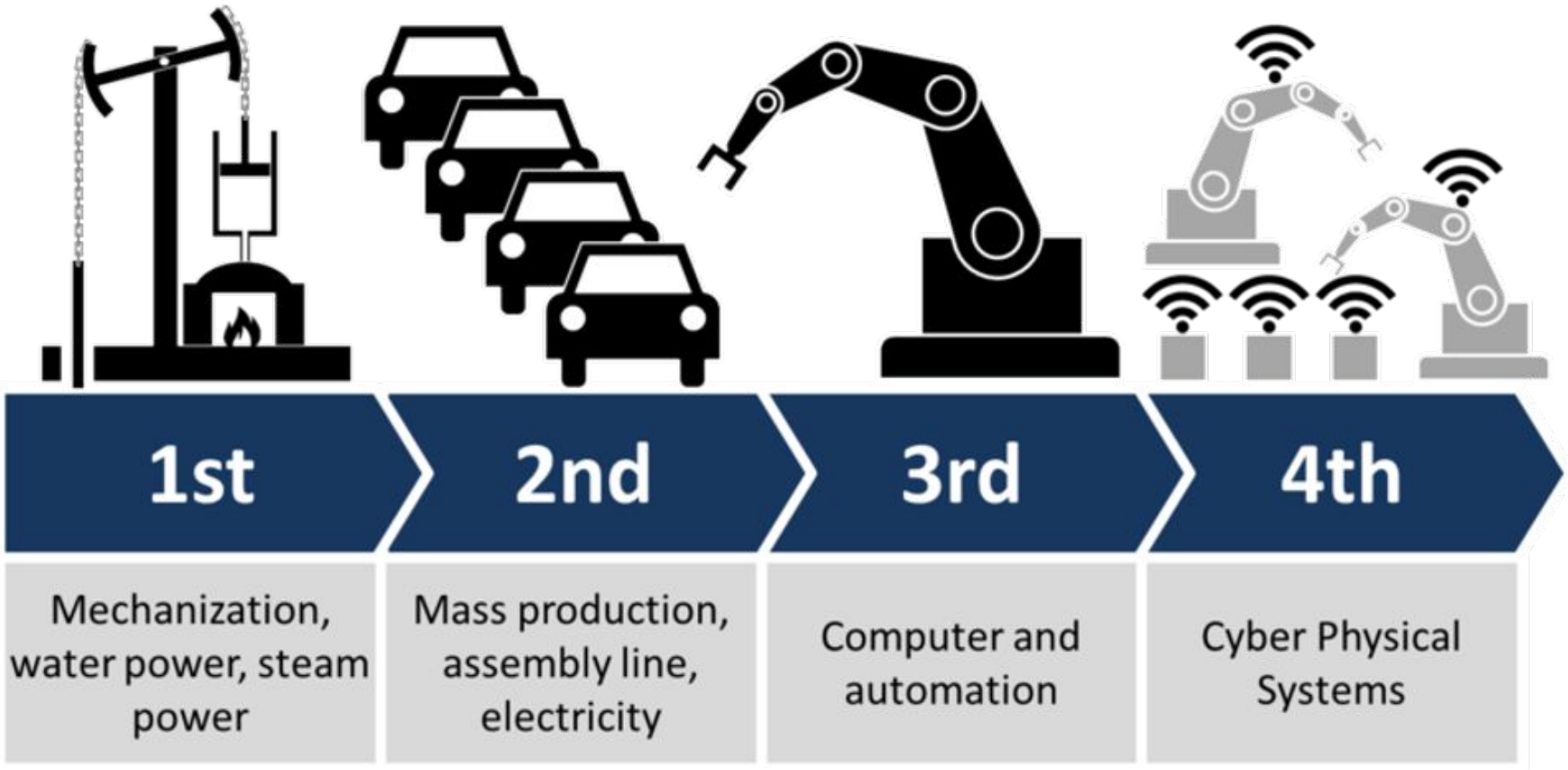
Who is Bram Stoker?
$ 17,973
$21,600
WHO IS BRAM STOKER?
$5600

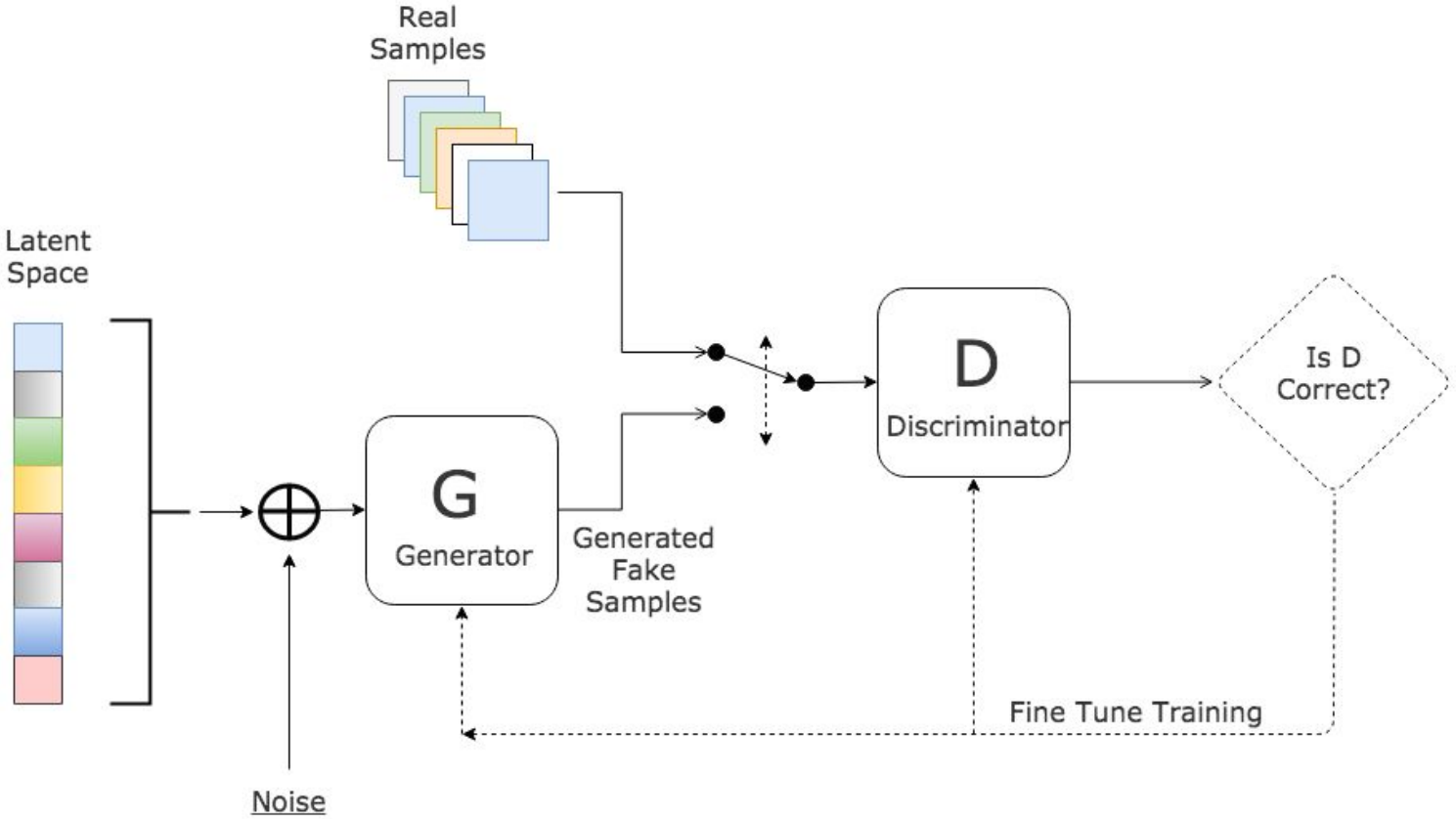
IBM Watson Health
Who is Bram Stoker?
$ 17,973

STOP



https://www.forbes.com/sites/bernardmarr/2016/04/05/why-everyone-must-get-ready-for-4th-industrial-revolution/

Generative Adversarial Network



https://www.kdnuggets.com/2017/01/generative-adversarial-networks-hot-topic-machine-learning.html

D: Detective

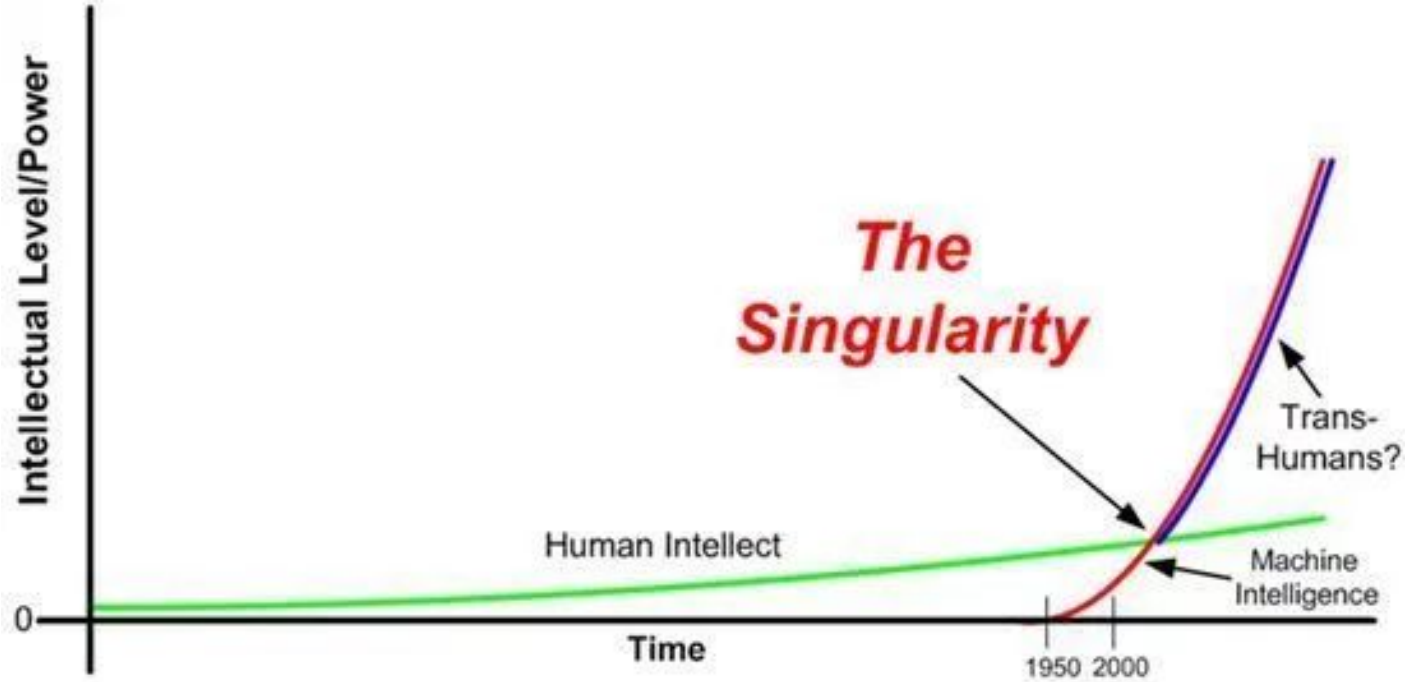
R: Real Data

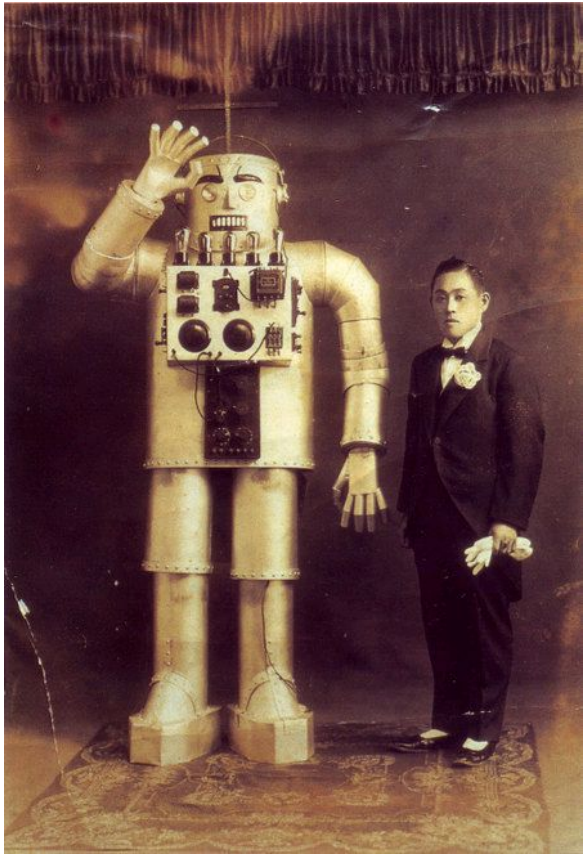
G: Generator (Forger)

I: Input for Generator

https://medium.com/@devnag/generative-adversarial-networks-gans-in-50-lines-of-code-pytorch-e81b79659e3f

https://hothardware.com/news/nvidia-neural-network-generates-photorealistic-faces-disturbing-results

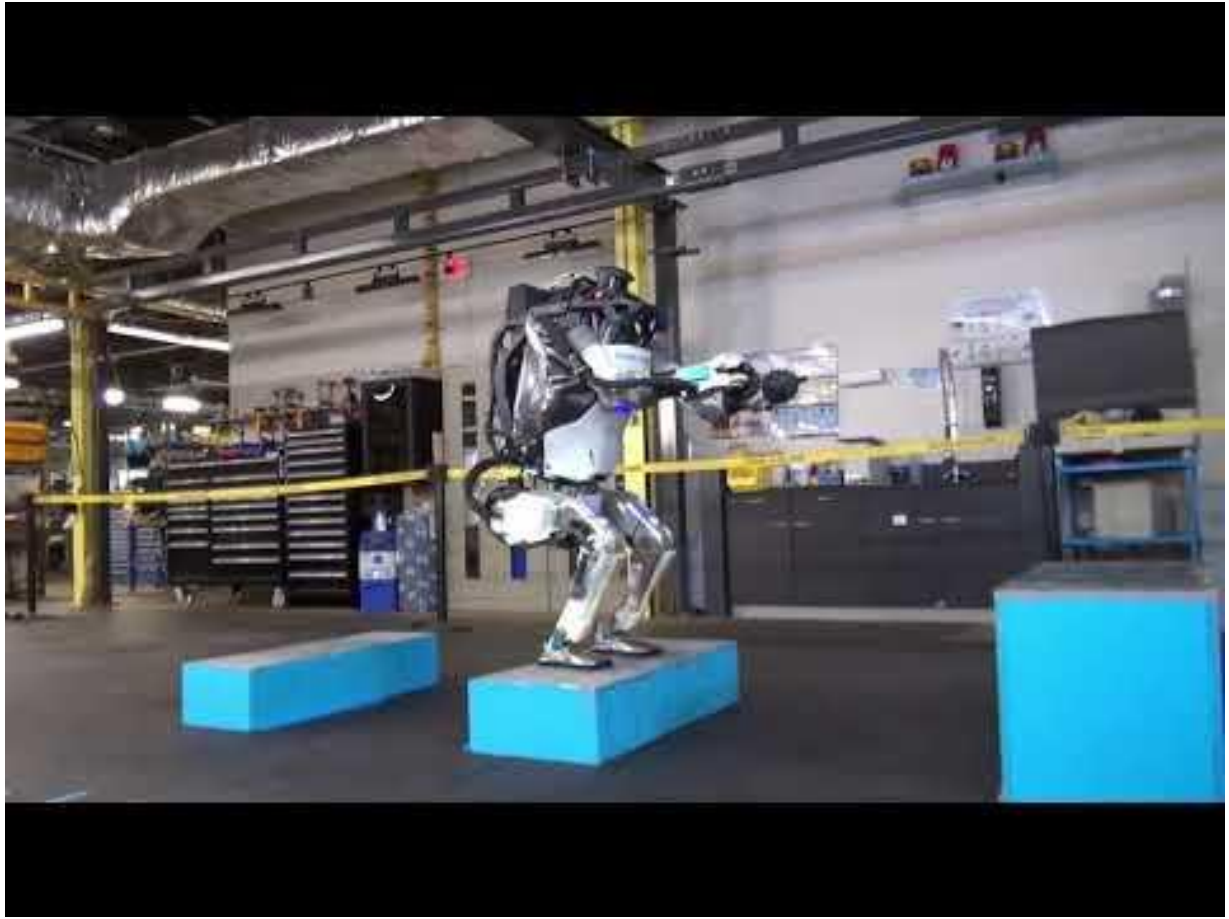

Intellectual Level/Power
0
Time
The Singularity
Trans-Humans?
Human Intellect
Machine Intelligence
1950
2000



1930s – Steel Humanoid Robot – Yasutaro Mitsui (Japanese)

http://cyberneticzoo.com/robots/1930c-steel-humanoid-yasutaro-mitsui-japanese/

BostonDynamics



https://youtu.be/SELVa0jsGkE

http://www.parorobots.com/

https://youtu.be/PNw4oicWmWU

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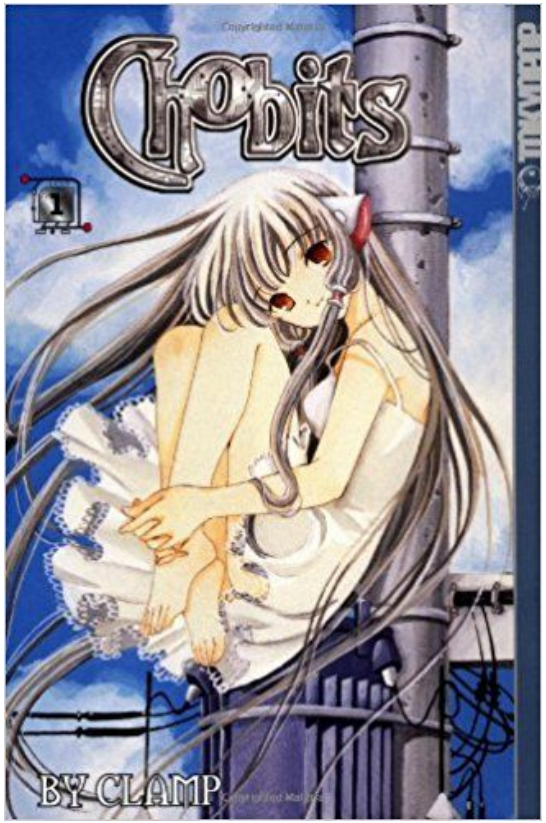
Chobits
1
BY CLAMP

https://www.youtube.com/watch?v=7Pq-S557XQU

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