Intel·ligència Artificial per a tots els públics

Agència de Desenvolupament Local de Solsona i Cardona

Carles Gómara
ACCIÓ

@cgomara
cgomara
cgomara@gencat.cat

ARTIFICIAL INTELLIGENCE (AI)

A.I.

Agència de Desenvolupament Local de Solsona i Cardona
Associació comercial d'empresaris del Berguedà
aCEB

DEFINITION

A.I.

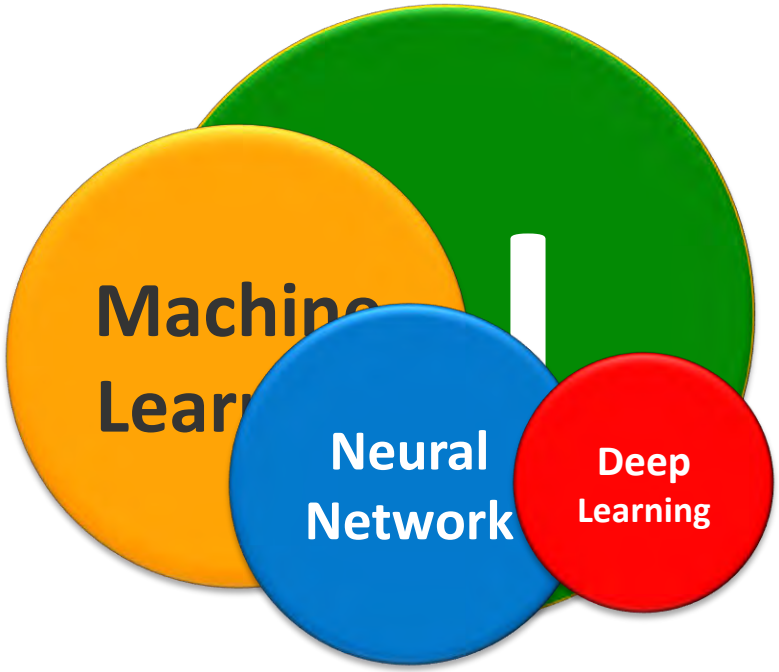
Mark Zuckerberg vs Elon Musk

Artificial intelligence (AI) is intelligence exhibited by machines.
In computer science, an ideal "intelligent" machine is a flexible rational agent that perceives its environment and takes actions that maximize its **chance of success** at some goal.

Source: wikipedia

http://www.forbes.com/sites/robertadams/2017/01/10/10-powerful-examples-of-artificial-intelligence-in-use-today/2/#18dc4dc31697
https://econsultancy.com/blog/67745-19-examples-of-artificial-intelligence-in-marketing/
https://www.quora.com/What-are-the-best-examples-of-artificial-intelligence

AI – ML – NN - DL



Dartmouth Summer Research Project on Artificial Intelligence (1956)

1956

A.I.

"The study is to proceed on the basis of the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to ***SIMULATE*** *it."*

Source: https://medium.com/cantors-paradise/the-birthplace-of-ai-9ab7d4e5fb00

ARTIFICIAL INTELLIGENCE (AI)

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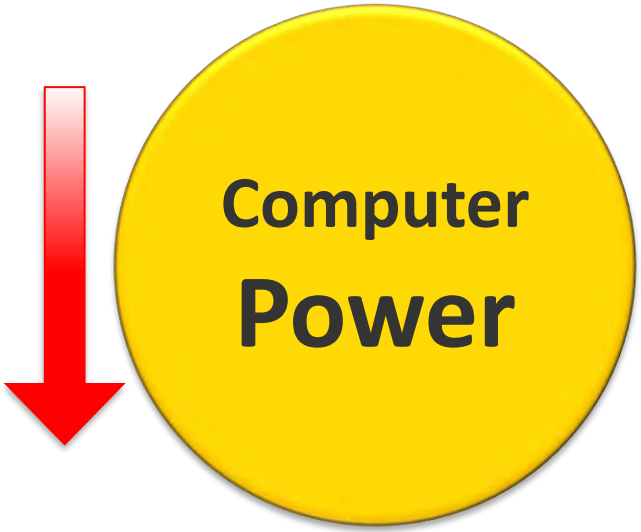
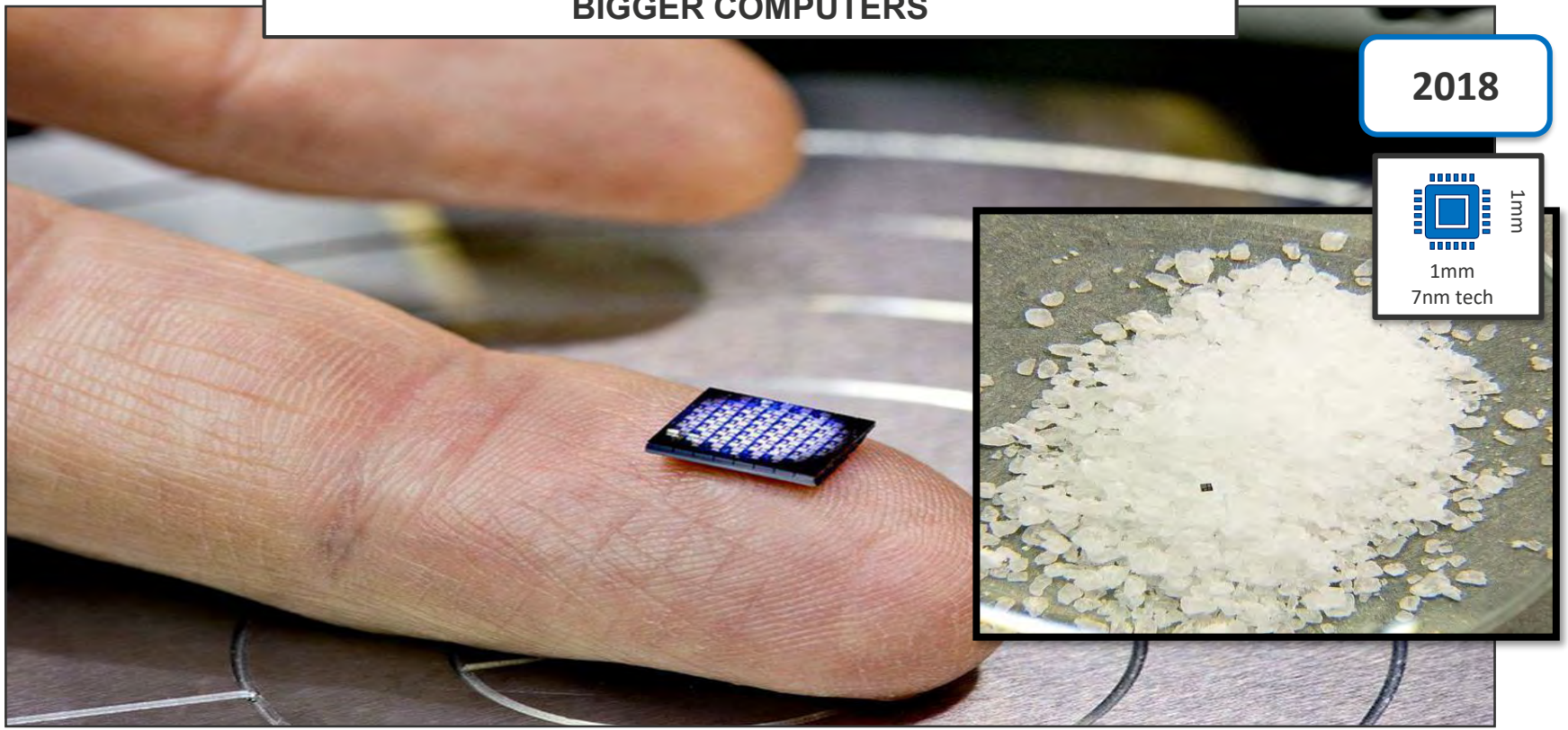


BIGGER COMPUTERS



IBM just unveiled the 'world's smallest computer' https://www.theverge.com/circuitbreaker/2018/3/19/17140116/ibm-worlds-smallest-computer-grain-of-salt-solar-powered
https://www.elespanol.com/ciencia/tecnologia/20180319/ordenador-pequeno-mundo-ibm-grano-sal/293222260_0.html
https://www.adslzone.net/2018/03/19/ibm-ordenador-mas-pequeno/

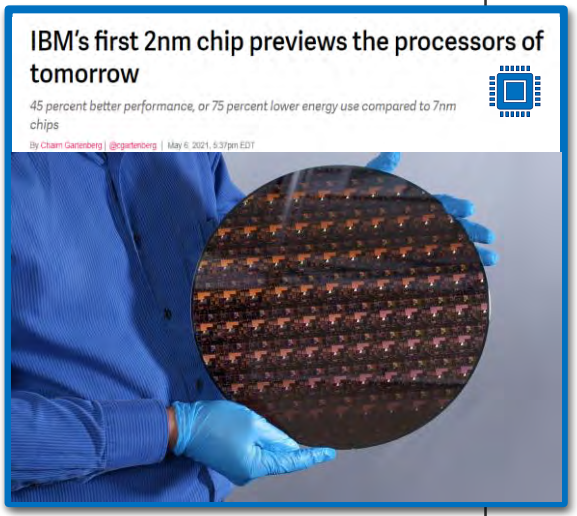
BIGGER COMPUTERS

2021

Human red blood cell:
7.000 nanometers in diameter

Chip
2 nanometers

Virus
on average are 14 nanometers diameter


IBM's first 2nm chip previews the processors of tomorrow

45 percent better performance, or 75 percent lower energy use compared to 7nm chips

By Chaim Gartenberg | @cgartenberg | May 6, 2021, 5:37pm EDT

The basics of microchips https://www.a[illegible]/en/technology/all-about-microchips/microchip-basics

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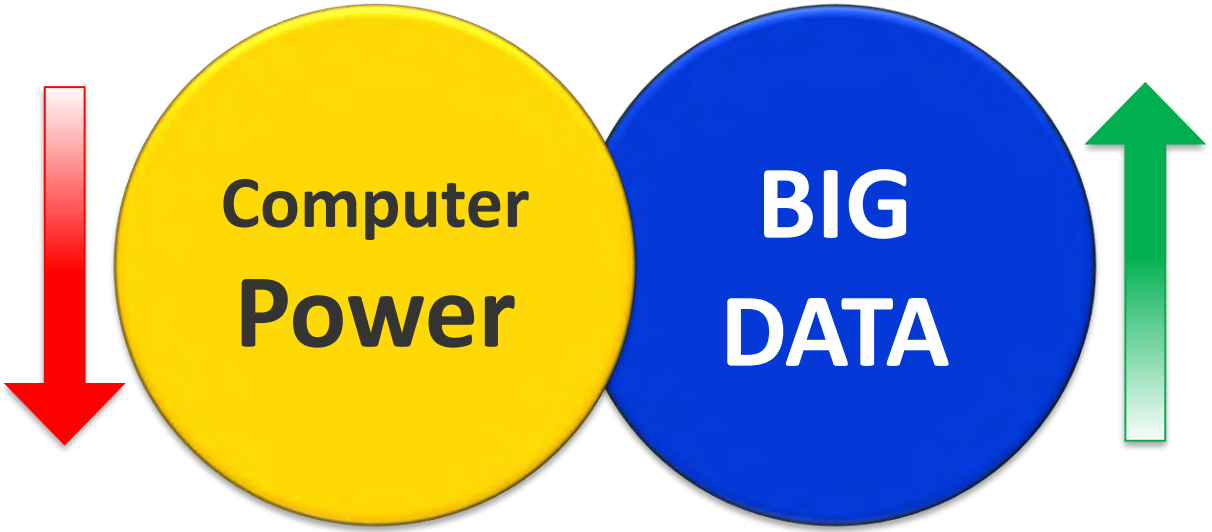

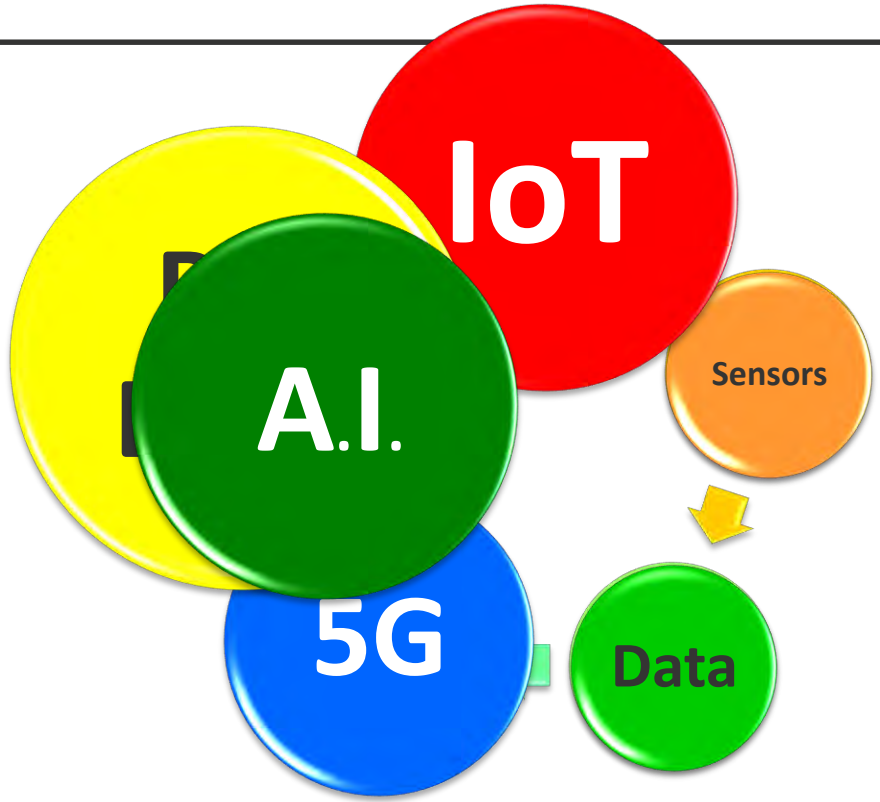

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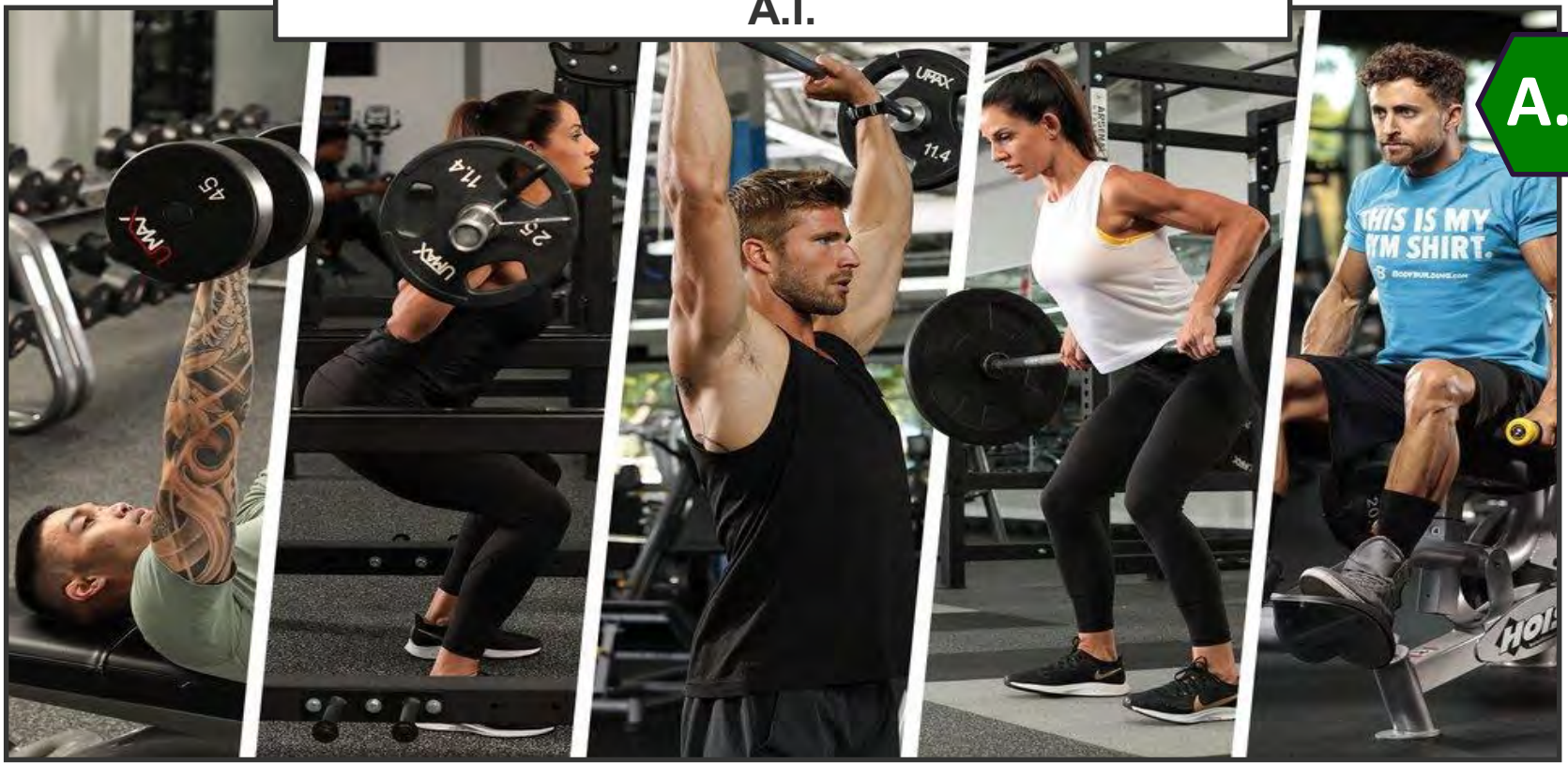
A.I. eats BIG DATA

A.I.



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Big Data and AI

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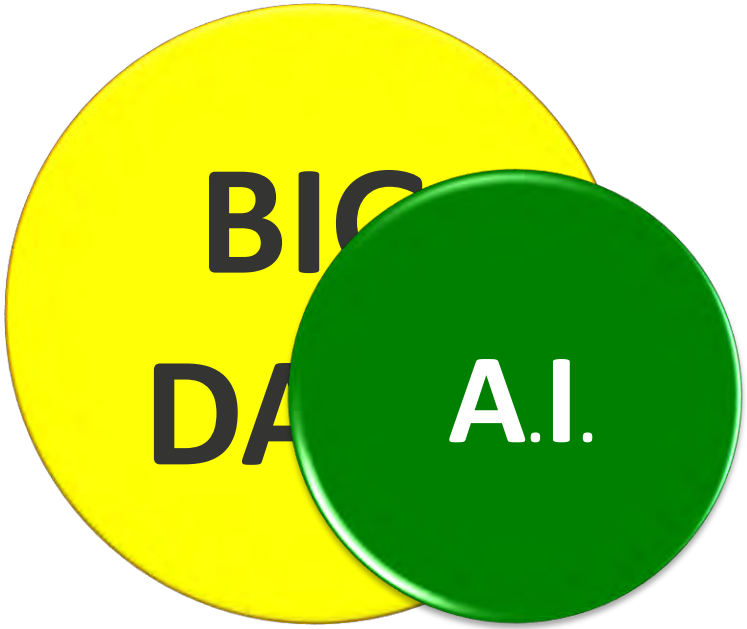

Small Data and AI

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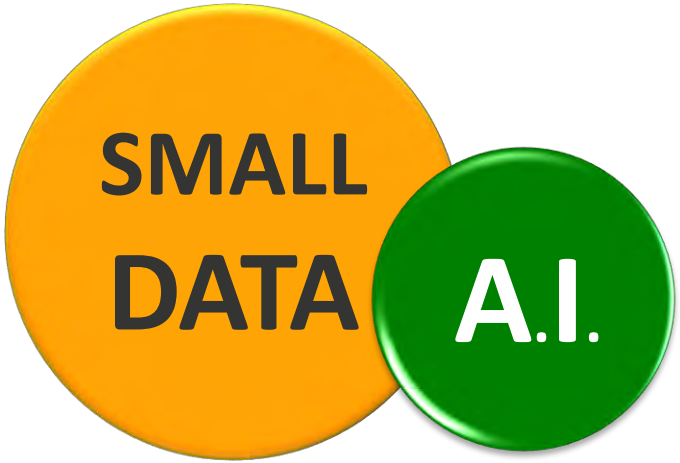

Examples of sources of Small Data:

- The behavior of followers on social networks.
- Transactions made at your Point of Sales (POS/TPV).
- Visits to your website and browsing through the pages.
- The information related to your suppliers.
- The data of your advertising campaigns.
- Tracking of work reports and customer relationships.
- Vehicle fleet movements

Source: https://javierlenero.com/que-es-small-data/

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EXAMPLES

- The goal is to REACH people's ability
- The goal is to EXCEED people's ability

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COMMUNICATION

The goal is to REACH people's ability

- **Natural Language Processing (NLP)**
- **Speech**

PERSONAL ASSISTANT

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CAN A COMPUTER TALK LIKE A HUMAN ?

TURING TEST

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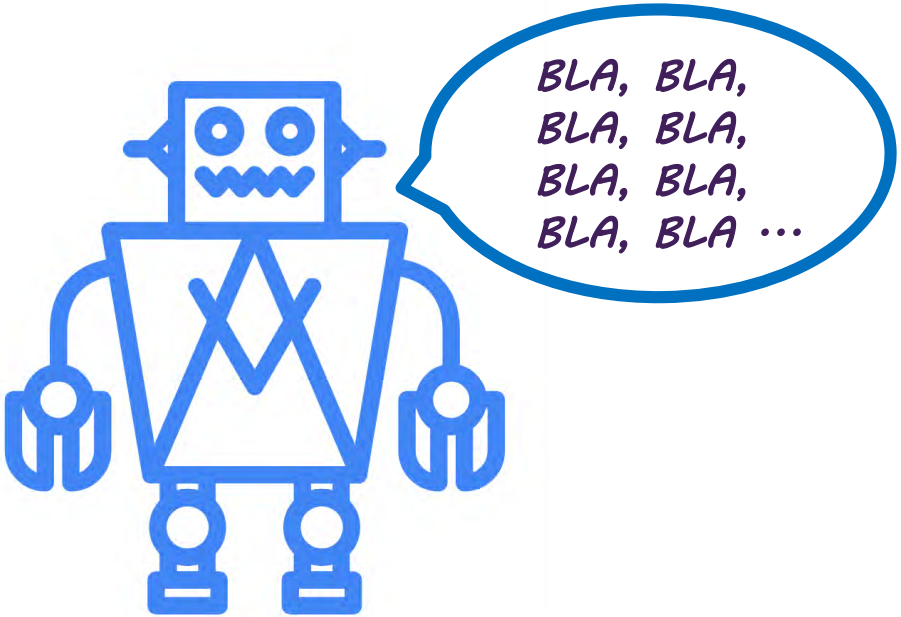
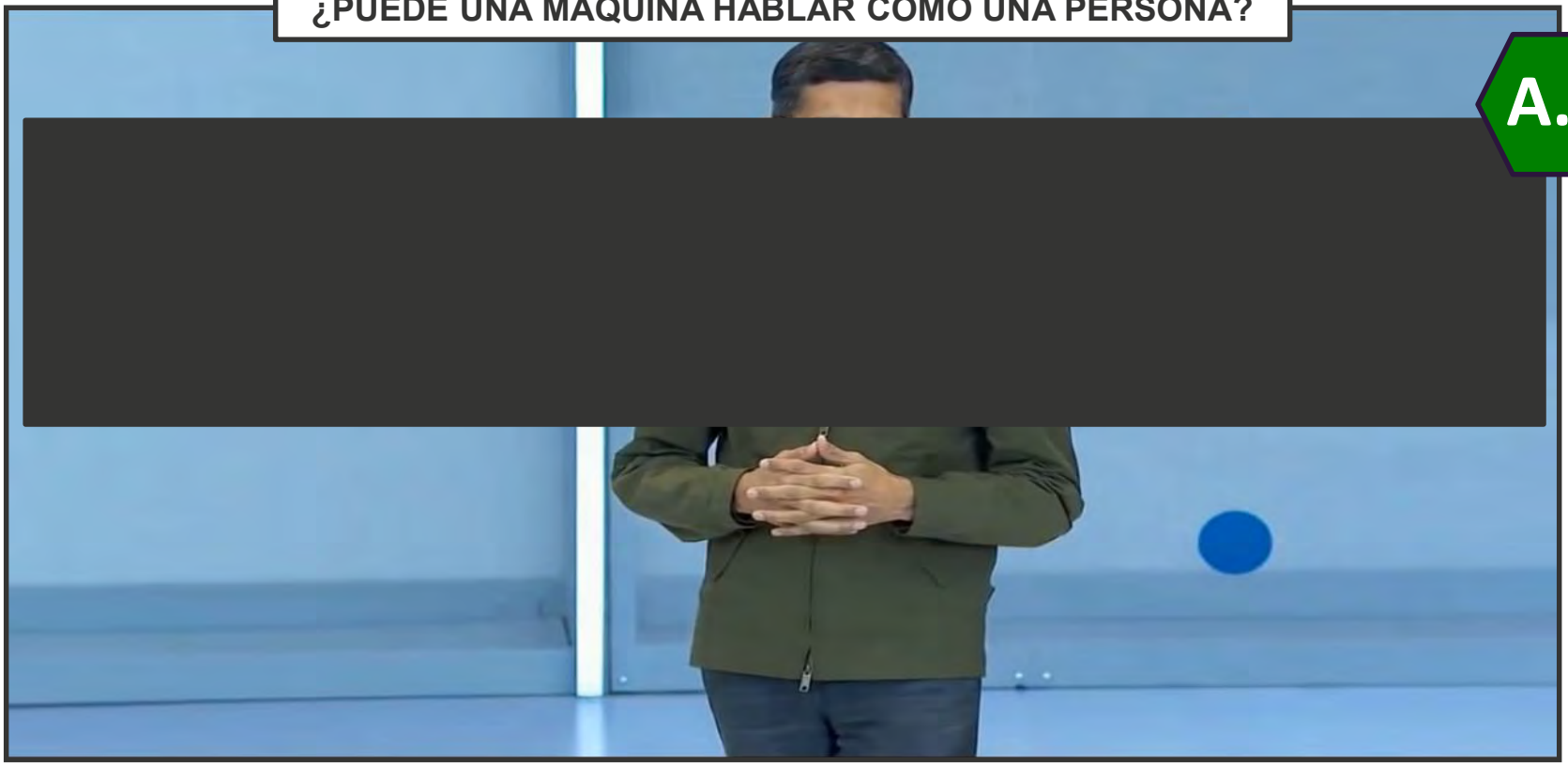


Source: Wikipedia. Alan Turing https://en.wikipedia.org/wiki/Alan_Turing#Early_computers_and_the_Turing_test
Image: https://www.autodraw.com/

¿PUEDE UNA MÁQUINA HABLAR COMO UNA PERSONA?



https://www.youtube.com/watch?v=D5VN56jQMWM
https://ai.googleblog.com/2018/05/duplex-ai-system-for-natural-conversation.html?m=1
Google Duplex: An AI System for Accomplishing Real World Tasks Over the Phone

4 min
Start 2 min

Personal Assistant

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IMAGE RECOGNITION

The goal is to REACH people's ability … and EXCEED it

SUPERVISED

A.I.

TED Talks. How we teach computers to understand pictures | Fei Fei Li https://youtu.be/40riCqvRoMs

IMATGE RECOGNITION

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One picture every 200 milliseconds

https://en.Wikipedia.org/wiki/ImageNet

SUPERVISED

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TED Talks. How we teach computers to understand pictures | Fei Fei Li https://youtu.be/40riCqvRoMs

https://thing-translator.appspot.com/

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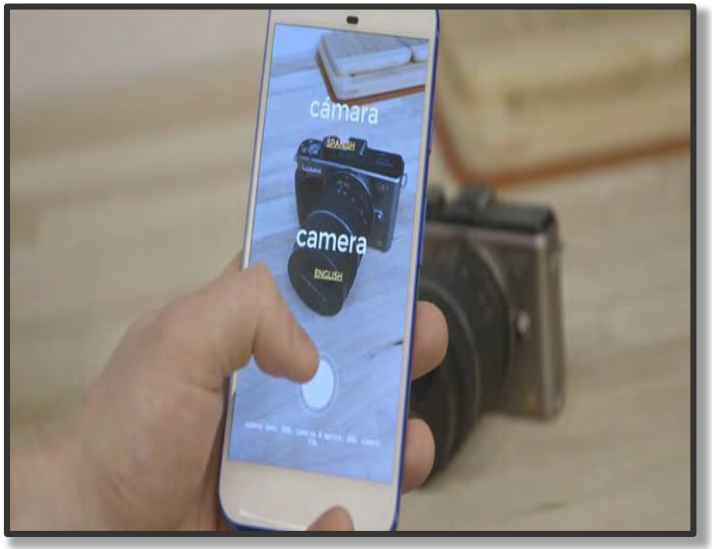

HEALTH

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Stanford | News

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JANUARY 25, 2017

Deep learning algorithm does as well as dermatologists in identifying skin cancer

In hopes of creating better access to medical care, Stanford researchers have trained an algorithm to diagnose skin cancer.

BY TAYLOR KUBOTA

It's scary enough making a doctor's appointment to see if a strange mole could be cancerous. Imagine, then, that you were in that situation while also living far away from the nearest doctor, unable to take time off work and unsure you had the money to cover the cost of the visit. In a scenario like this, an option to receive a diagnosis through your smartphone could be lifesaving.

Universal access to health care was on the minds of computer scientists at Stanford when they set out to create an artificially intelligent diagnosis algorithm for skin cancer. They made a database of nearly 130,000 skin disease images and trained their algorithm to visually diagnose potential cancer. From the very first test, it performed with inspiring accuracy.

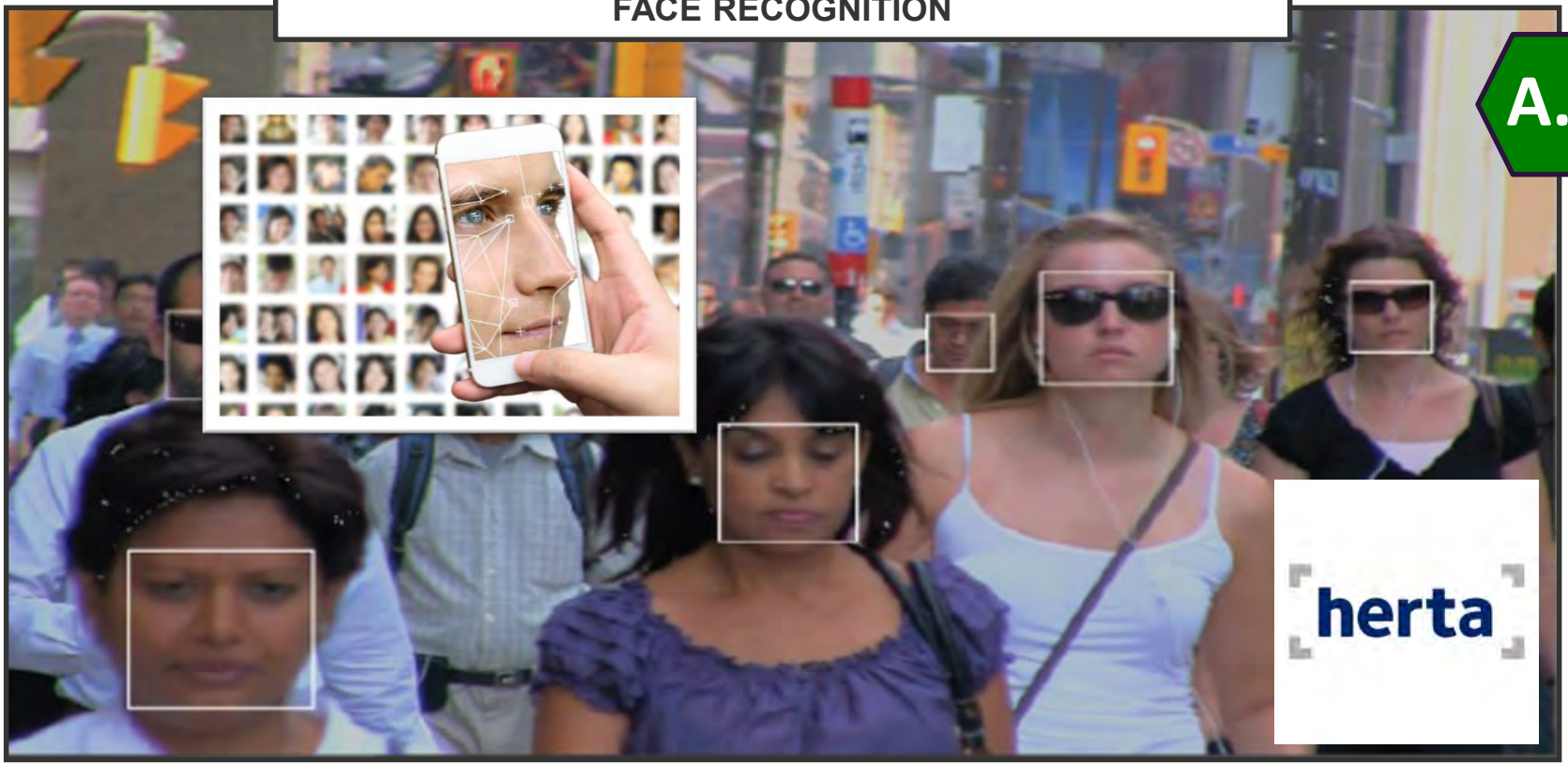
"We realized it was feasible, not just to do something well, but as well as a human dermatologist," said Sebastian Thrun, an adjunct

A dermatologist uses a dermatoscope, a type of handheld microscope, to look at skin. Computer scientists at Stanford have created an artificially intelligent diagnosis

Source: http://news.stanford.edu/2017/01/25/artificial-intelligence-used-identify-skin-cancer/

Another case: UK BIOBANK. Body composition images on 6,000 participants now available for research http://www.ukbiobank.ac.uk/2018/01/body-composition-images-on-6000-participants-now-available-for-research/

FACE RECOGNITION



http://www.hertasecurity.com/en

Big Brother .. For fishes ??

http://www.lavanguardia.com/internacional/20180503/443196686690/china-puntuacion-ciudadanos-delitos-sociales.html
https://blog.x.company/introducing-tidal-1914257962c3

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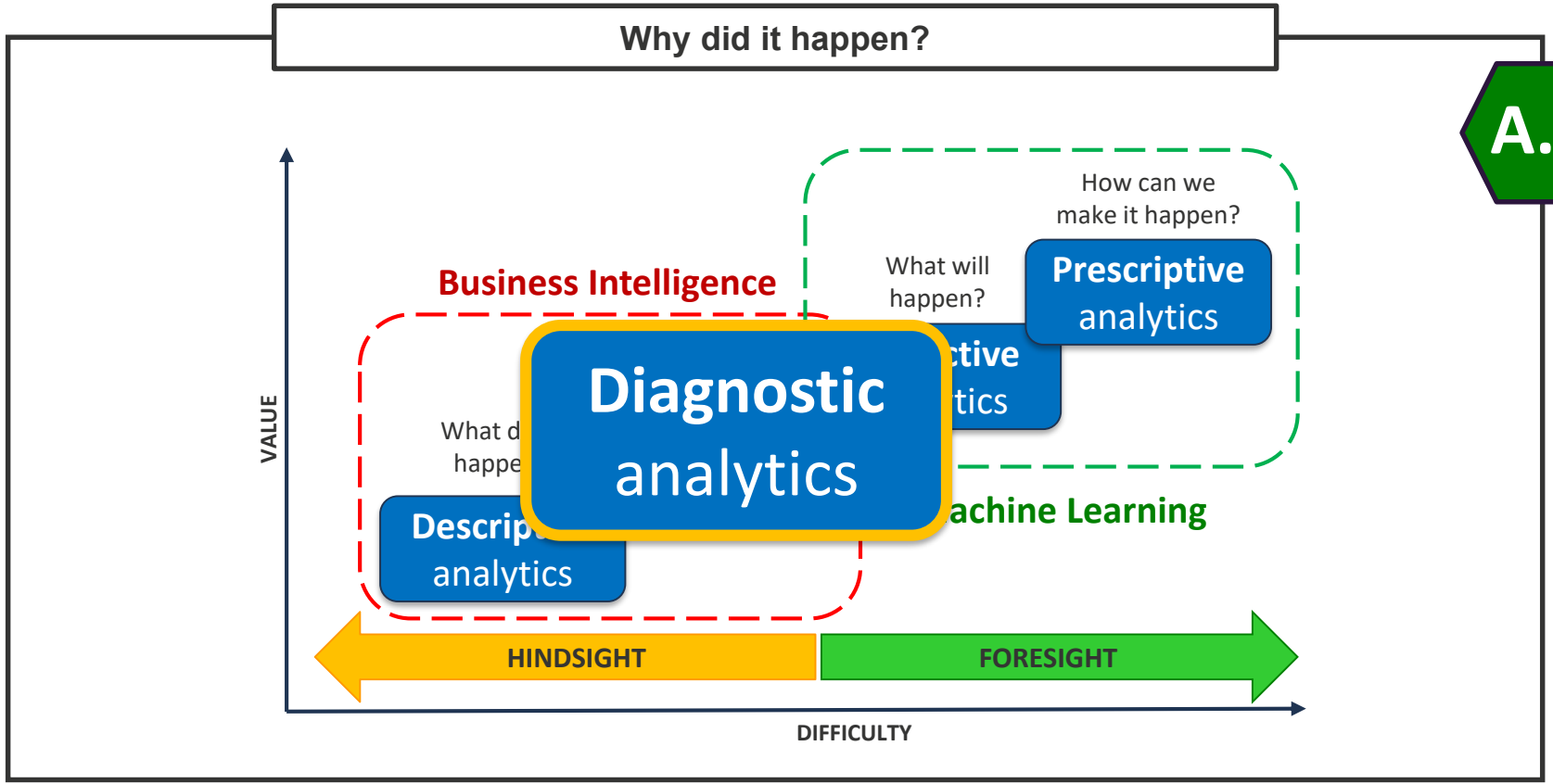
DATA PROCESSING

The goal is to EXCEED people's ability



Source: Graphic. Gartner
What is Analytics? How is it evolving? https://research.aimultiple.com/what-is-analytics/

CUSTOMER SEGMENTATION

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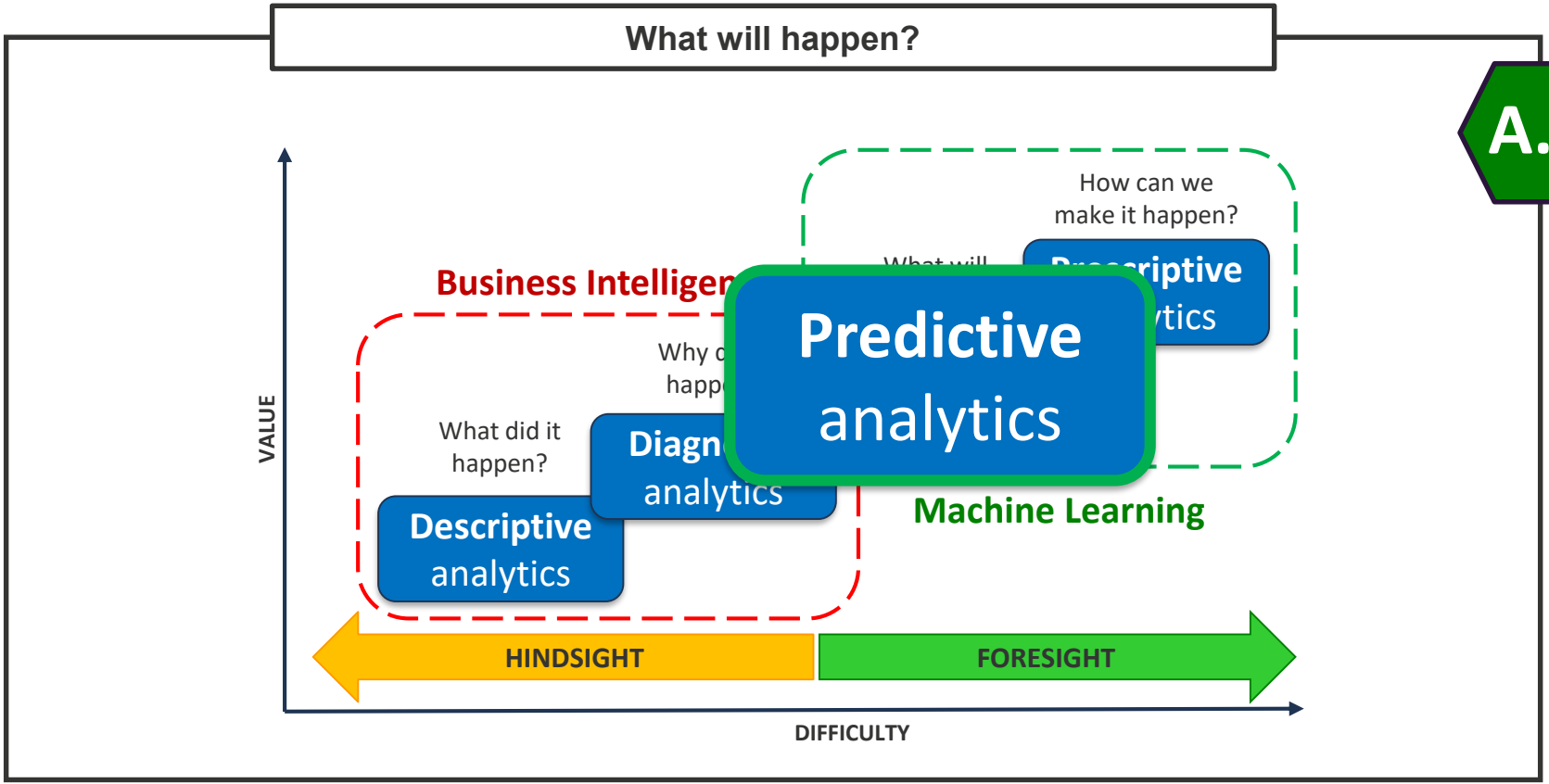
Discover
Cause-Effect
relationships



Source: Graphic. Gartner
What is Analytics? How is it evolving? https://research.aimultiple.com/what-is-analytics/

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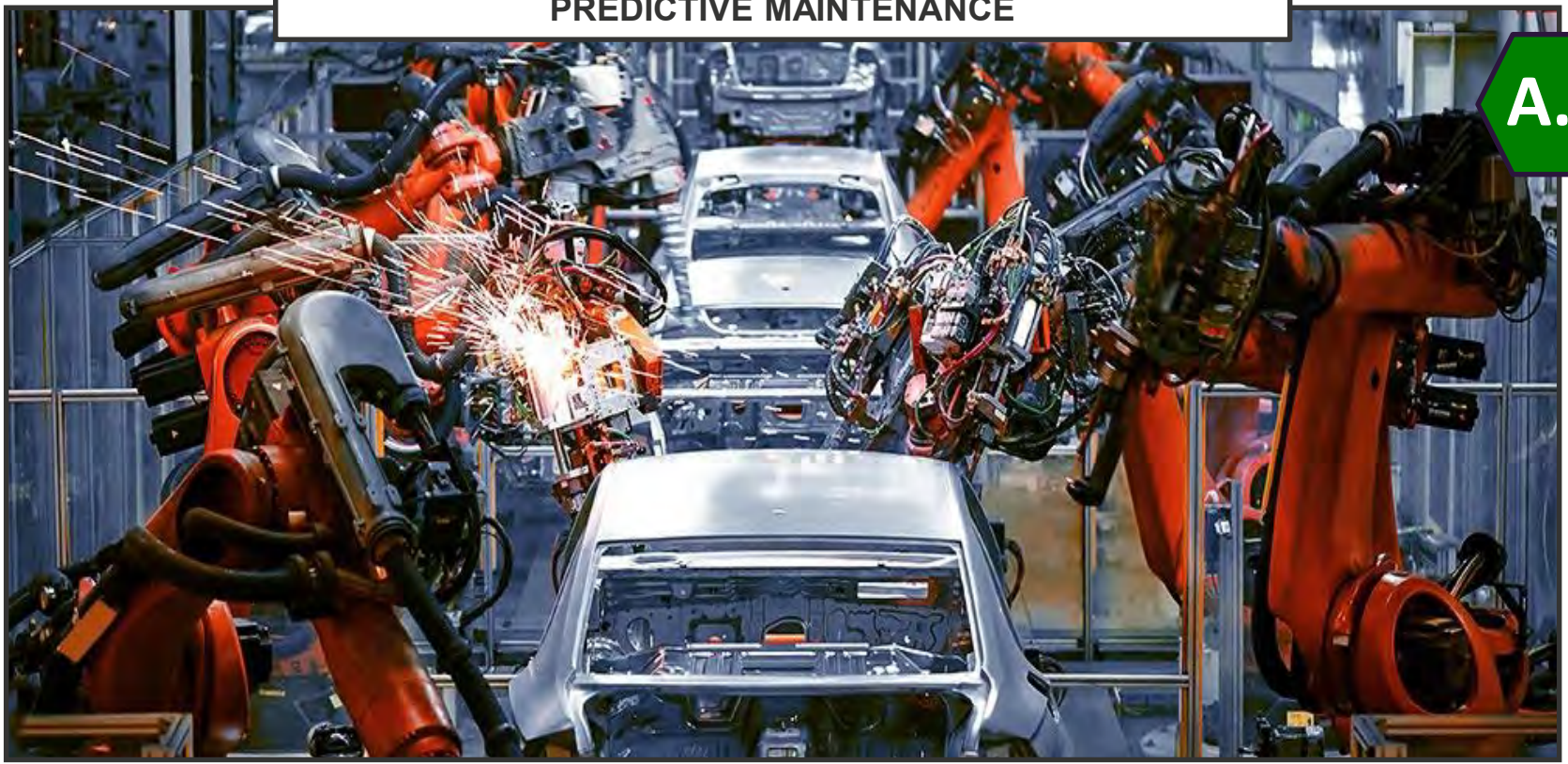
EMAIL

PREDICTIVE MAINTENANCE



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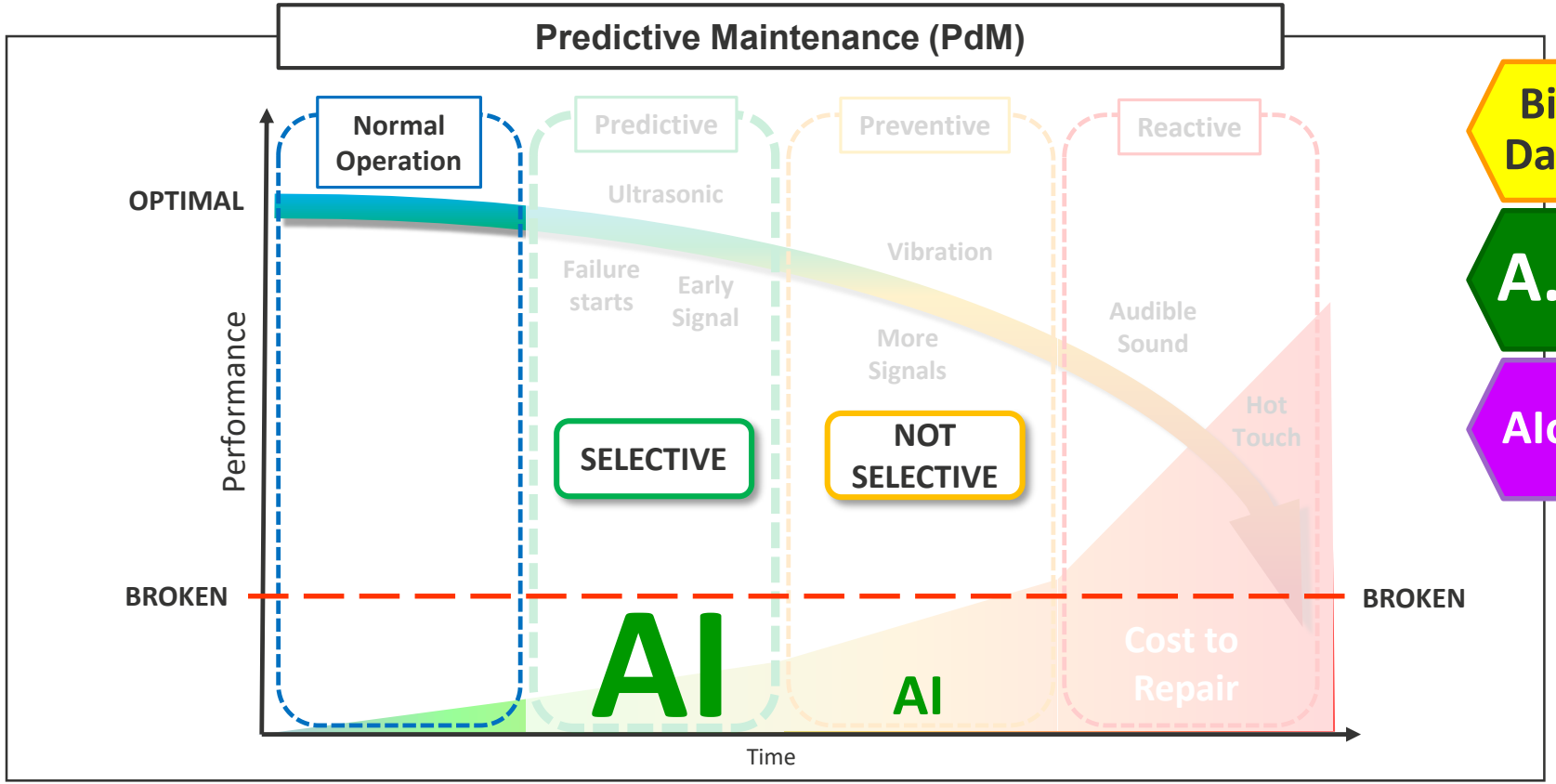
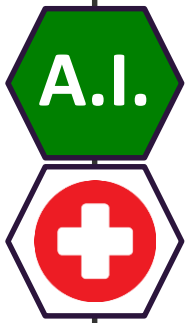


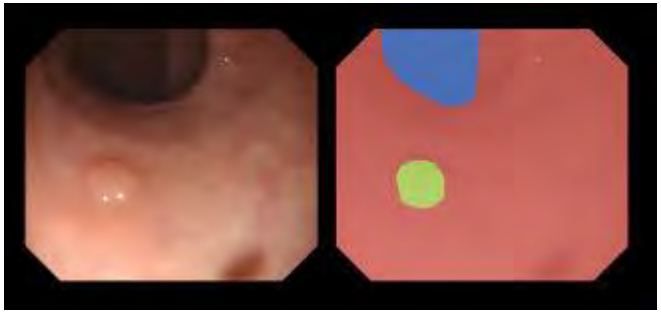
Source: Predictive Maintenance: Two Sides Of A Coin by Tobias Schneider-Pungs https://myengineers.blogspot.com/2015/09/predictive-maintenance-two-sides-of.html
https://powerbi.microsoft.com/es-es/blog/IIA-The-Heart-of-Equipment-Maintenance-2093.html
Predict and Prevent: Improving Your Maintenance Strategy https://www.hanarasoft.com/preventive-maintenance-vs-predictive-maintenance/

HEALTH



A.I. identifies tumors in colorectal cancer patients with 93% accuracy

Source: Radiology Business



https://www.radiologybusiness.com/topics/artificial-intelligence/ai-colorectal-cancer-convolutional-neural-network

https://www.ithera.com/

https://arxiv.org/pdf/1612.00799.pdf

HEALTH

Artificial intelligence predicts which cancer patients will respond to immunotherapy

WITH 75% RELIABILITY

Vall d'Hebron Instituto de Oncología (VHIO)

A.I.

"The goal is to move towards precision medicine"

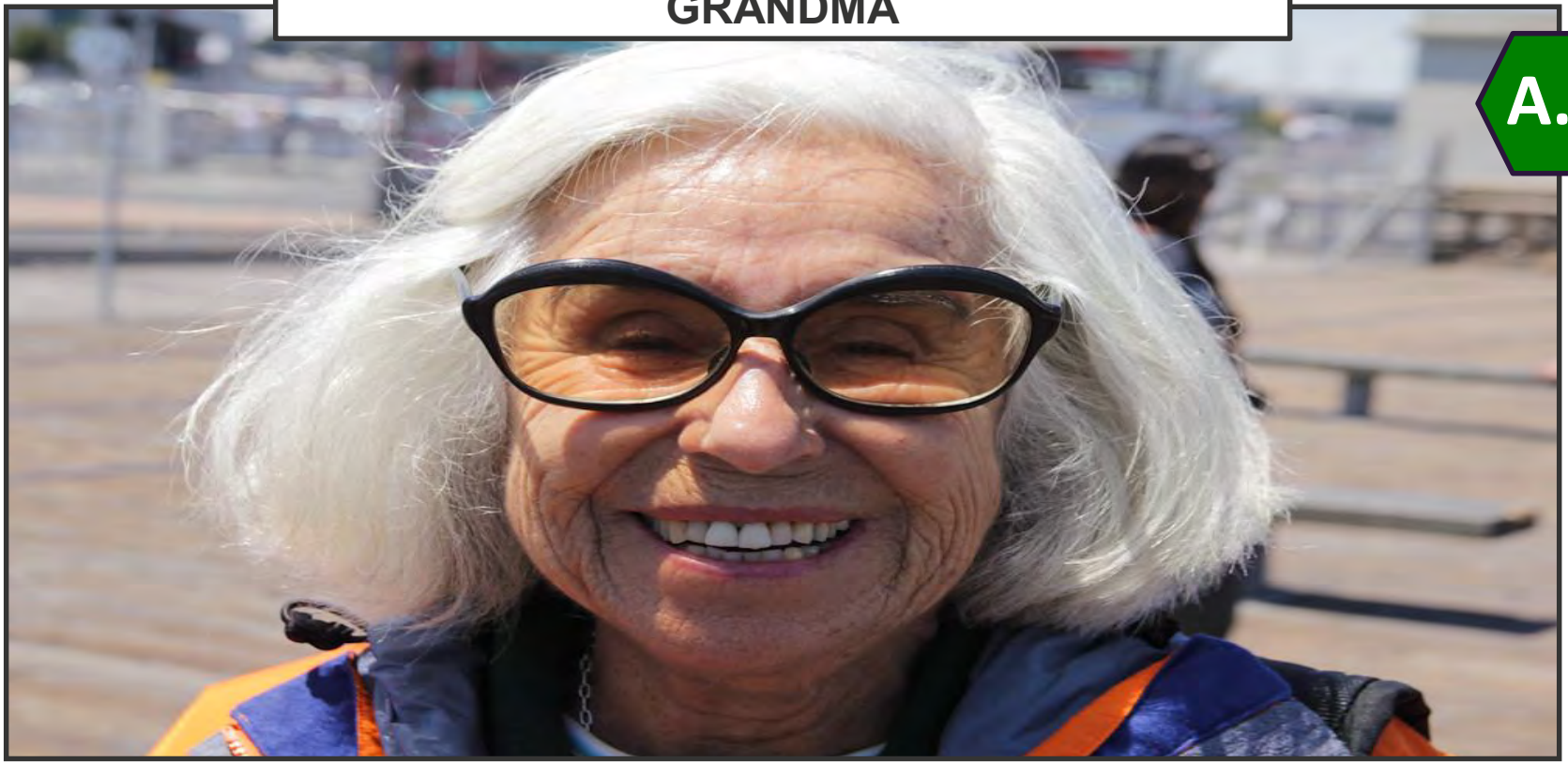
Source: La Vanguardia https://www.lavanguardia.com/ciencia/20210126/6199181/inteligencia-artificial-predice-que-pacientes-cancer-responderan-inmunoterapia.html

A.I.

A.I.

A.I. eats BIG DATA

GRANDMA

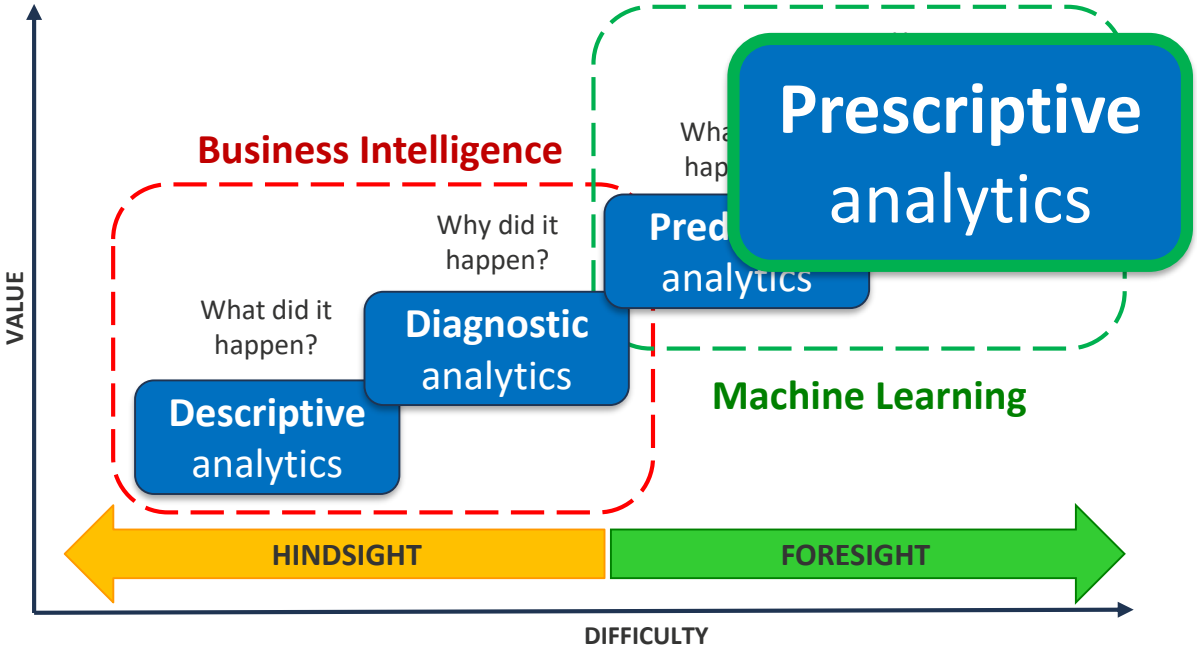


A.I.

A.I.
GRANNY
I Really Want to See You, Grandma

How can we make it happen?

A.I.



Source: Graphic. Gartner
What is Analytics? How is it evolving? https://research.aimultiple.com/what-is-analytics/

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Take decisions

(and self-learning)

The goal is to EXCEED people's ability

Deterministic Games: Tic Tac Toe, Checkers, and Chess

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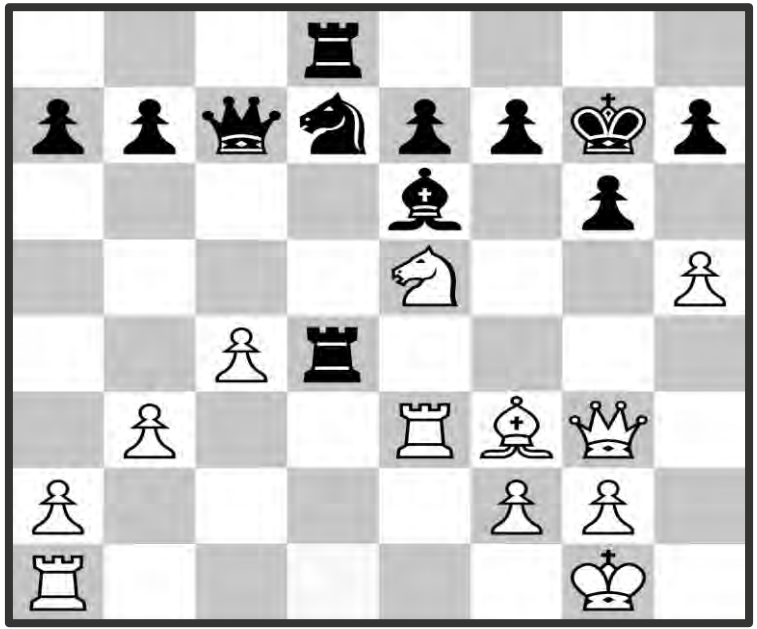


Source: Elements AI, Reaktor and the University of Helsinki. www.elementsofai.com and own

DEALING WITH UNCERTAINTY

A.I.

VS

Source: Elements AI. Reaktor and the University of Helsinki. www.elementsofai.com and own

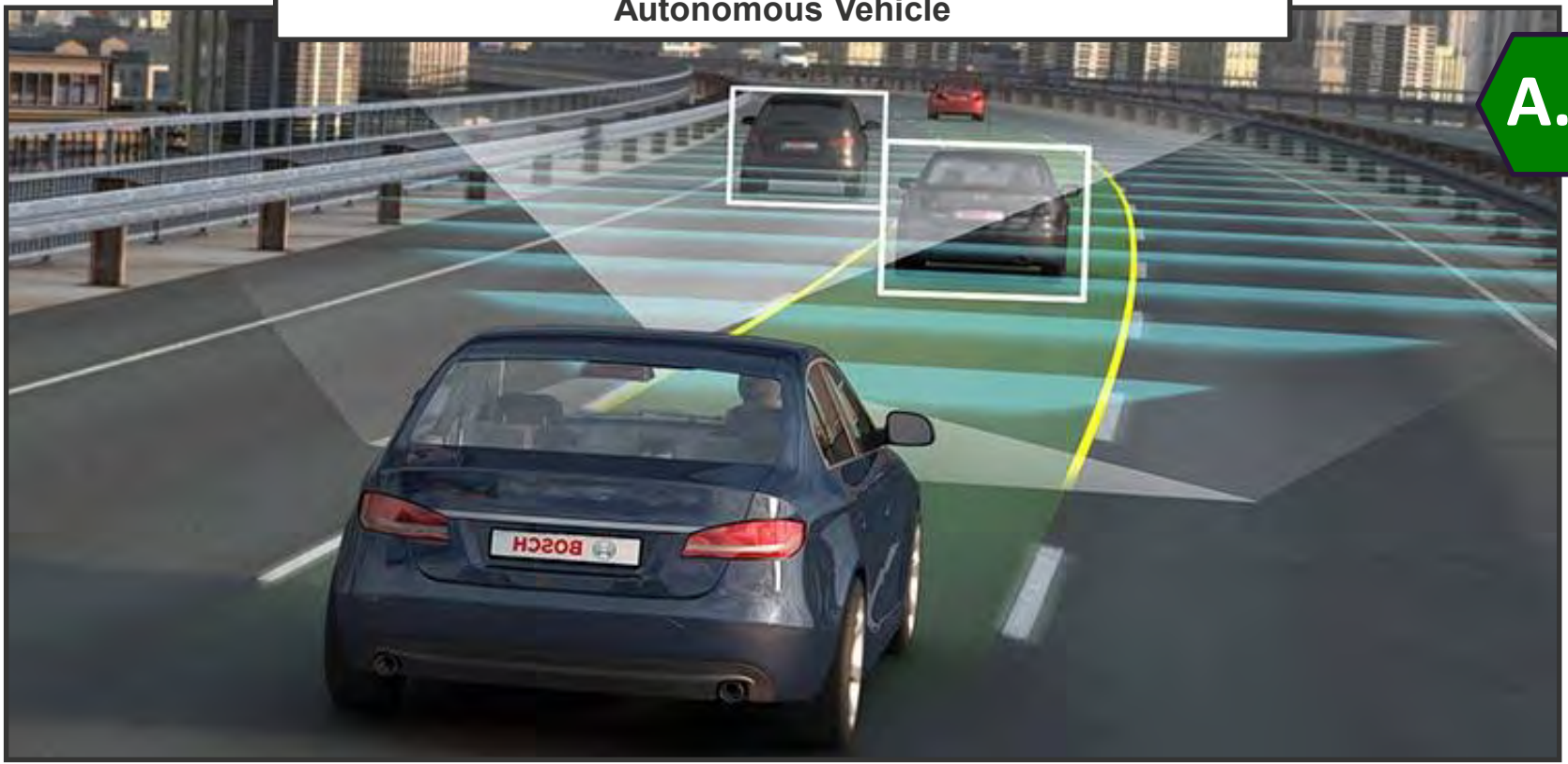
MODERN AI

A.I.

incertesa

Source: Elements AI. Reaktor and the University of Helsinki. www.elementsofai.com

Autonomous Vehicle



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http://nowdailyGeneralitat de Catalunya
Government of Catalonia

A.I.

Narrow AI

refers to AI that handles one task

General AI

refers to a machine that can handle any intellectual task

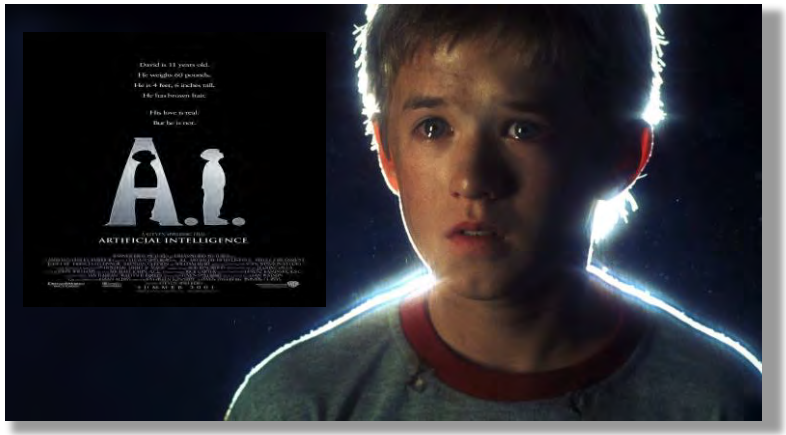
Source: What is AI? Everything you need to know about Artificial Intelligence https://www.zdnet.com/article/what-is-ai-everything-you-need-to-know-about-artificial-intelligence/

WHATS THE FUTURE OF A.I. ?

A.I.

Prediction 1: One of the most pervasive and persistent ideas related to the future of AI is the Terminator.

Prediction 2: AI will be all around us Examples: self-driving vehicles, recommendation systems, and image and video processing.



Source: Elements AI, Reaktor and the University of Helsinki. www.elementsofai.com and own

Gràcies

Agència de Desenvolupament Local de Solsona i Cardona

Carles Gómara
Deputy Director Innovation
ACCIÓ

@cgomara
cgomara
cgomara@gencat.cat