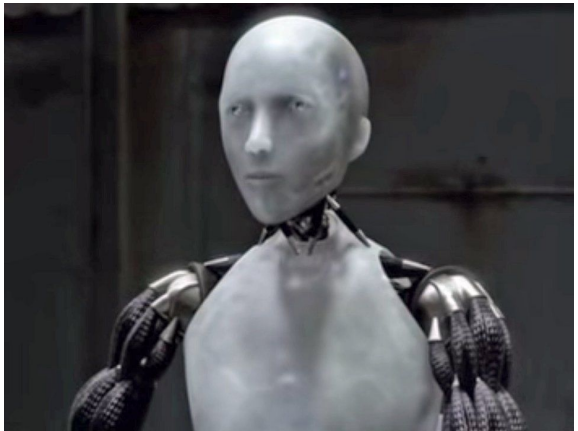
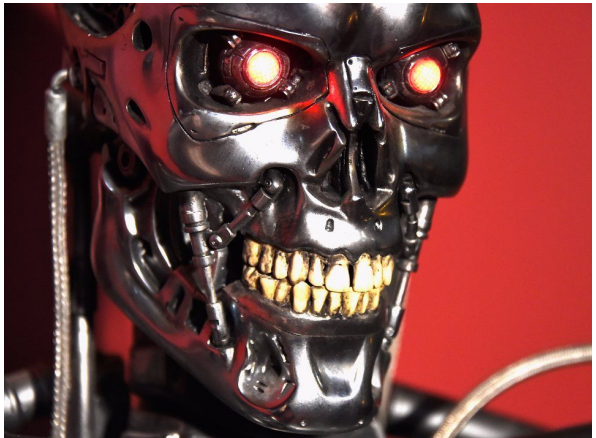
Inteligencia artificial - introducción

Ing. Ana Laura Diedrichs - ana.diedrichs@frm.utn.edu.ar

La gente cree que la Inteligencia Artificial (IA) es...

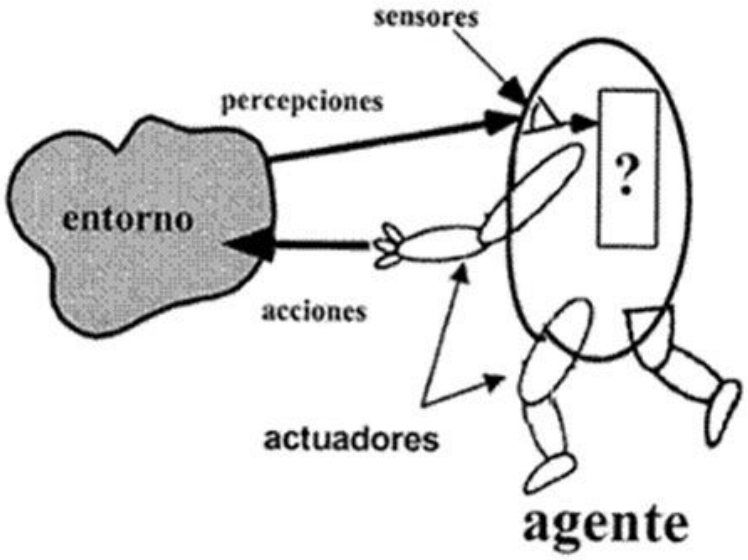




Definición Inteligencia Artificial

En informática, la inteligencia artificial se define como el estudio de "agentes inteligentes": cualquier dispositivo que perciba su entorno y tome medidas que maximicen sus posibilidades de alcanzar sus objetivos con éxito.

El término "inteligencia artificial" se aplica cuando una máquina imita funciones "cognitivas" que los humanos asocian con otras mentes humanas, como **"aprender"** y **"resolver problemas"**.



AI - ML -DL

Inteligencia Artificial – Aprendizaje automático – Aprendizaje profundo

Artificial Intelligence

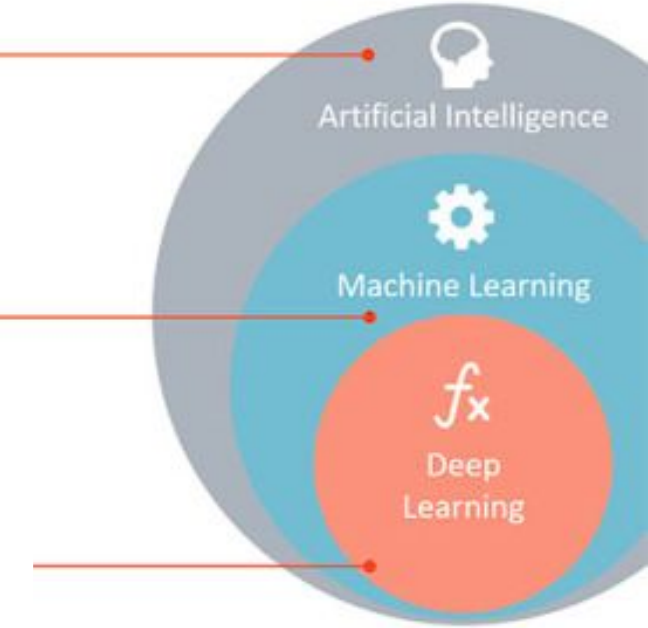
Que las computadoras “imiten” comportamiento humano (representación del conocimiento, planeamiento, búsqueda y optimización, razonamiento ante incertidumbre)

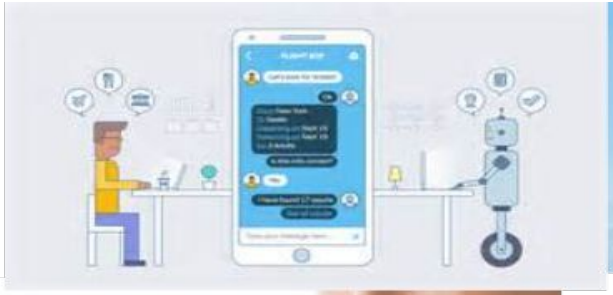
Machine Learning

Subcampo de AI, que usa métodos estadísticos que permiten crear modelos que mejoran con la experiencia

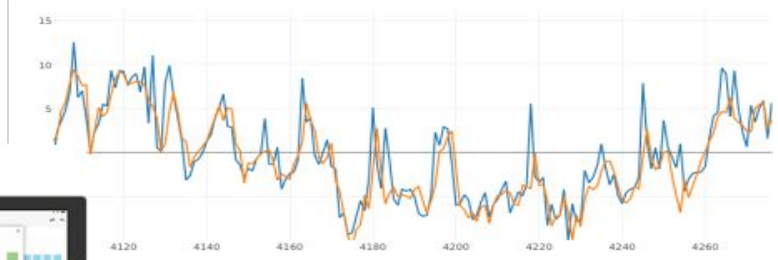
Deep Learning

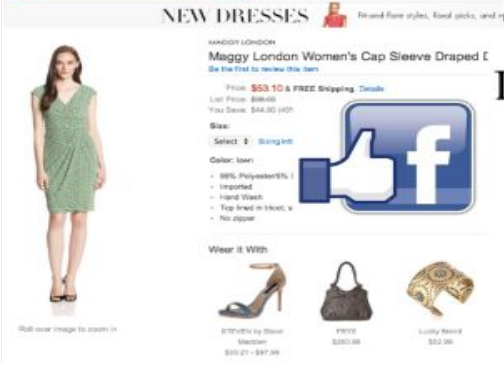
Subcampo de ML, que trata sobre redes neuronales profundas modelos multi-capa



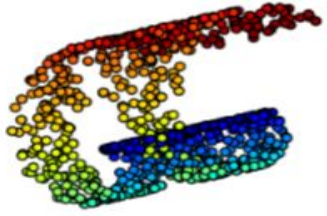


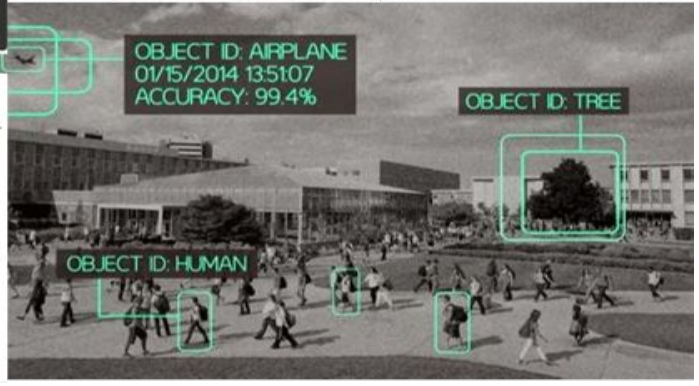
Aprendizaje automático (machine learning)





Dimensionality reduction



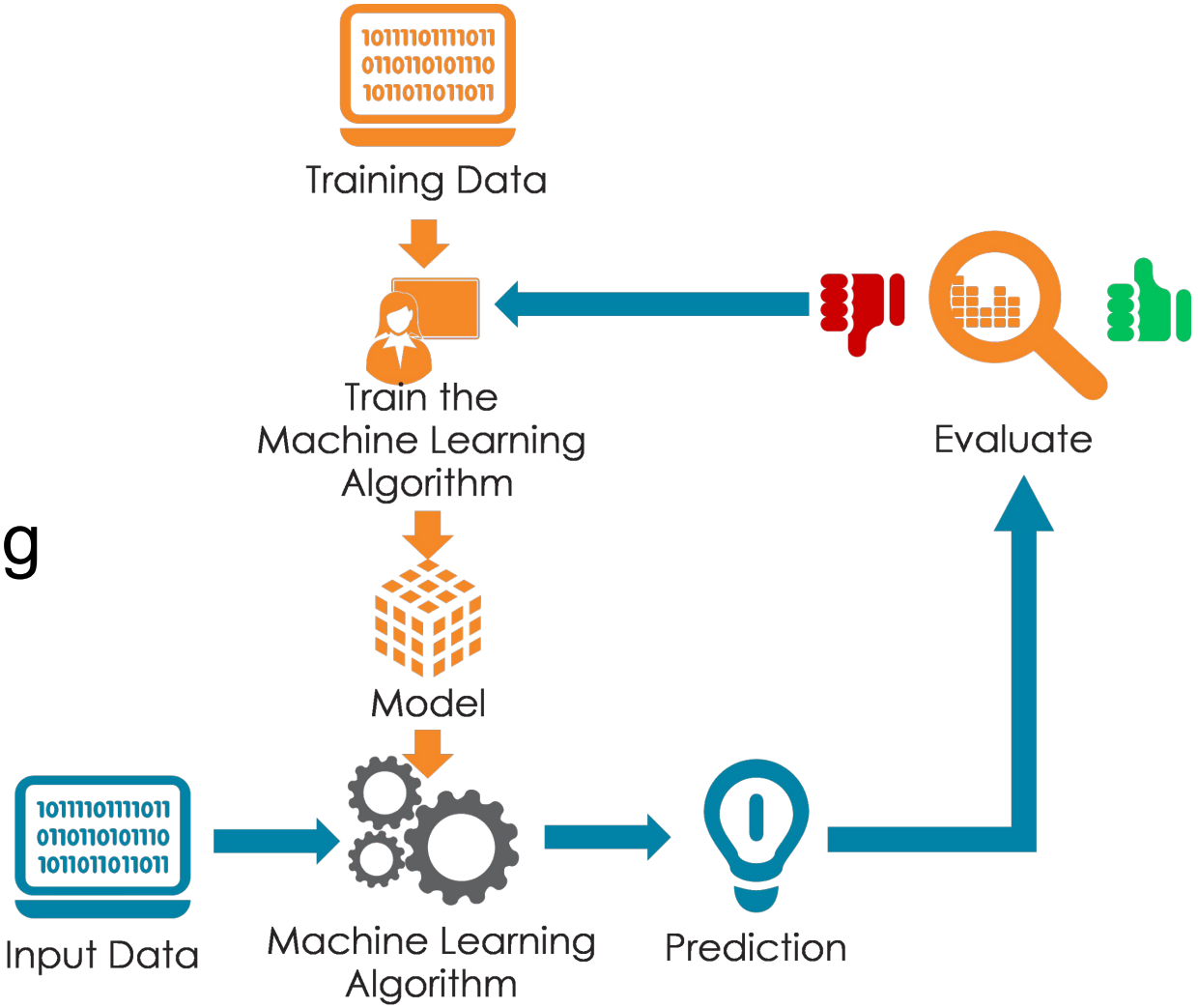


Brad Sams @bdsams · 10 ago.

AI has peaked.

1,2K 58K 180K

Flujo de trabajo
en
aprendizaje
automático
#machineLearning



CHROME VANADIUM
13
CHROME VANADIUM
15
CHROME VANADIUM
17
CHROME VANADIUM
8

AI + IoT = infinitas aplicaciones

Smart farm

agentes colaborativos
predicción de eventos
detección de anomalías

Smart grid

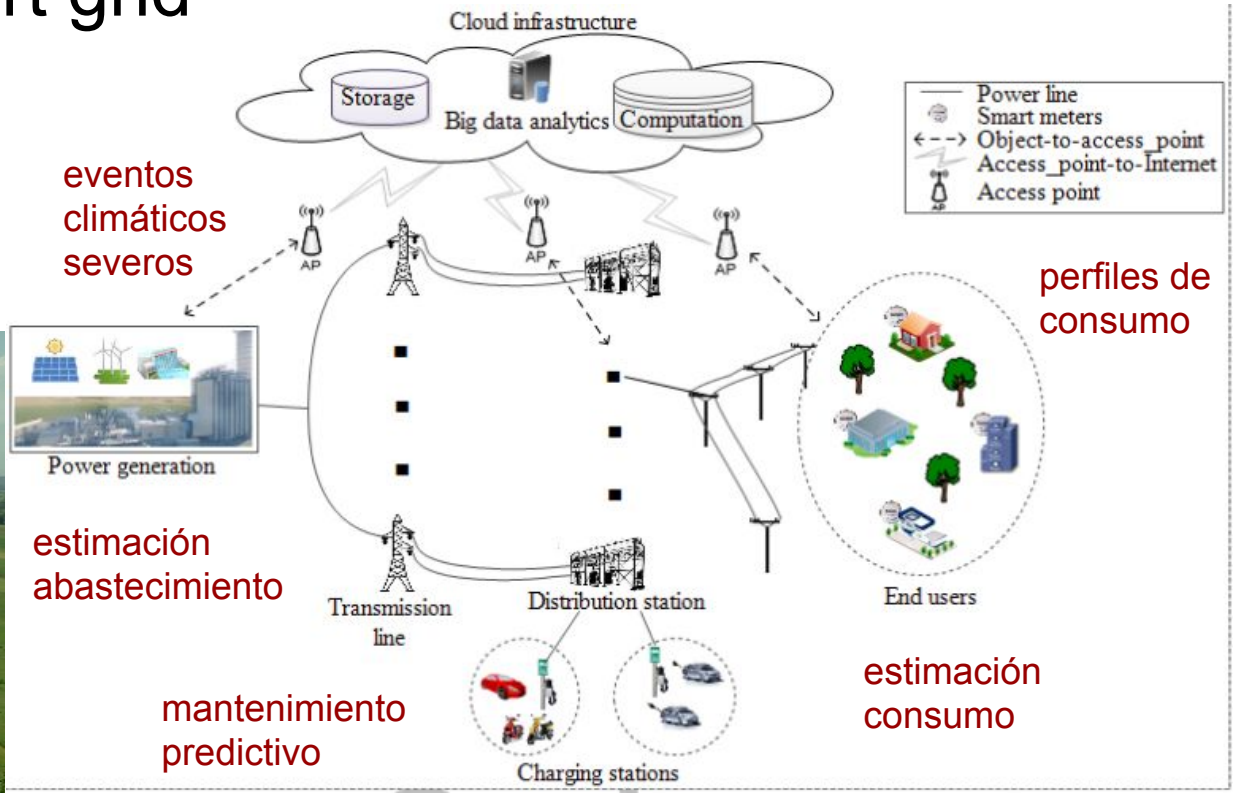
eventos climáticos severos

estimación abastecimiento

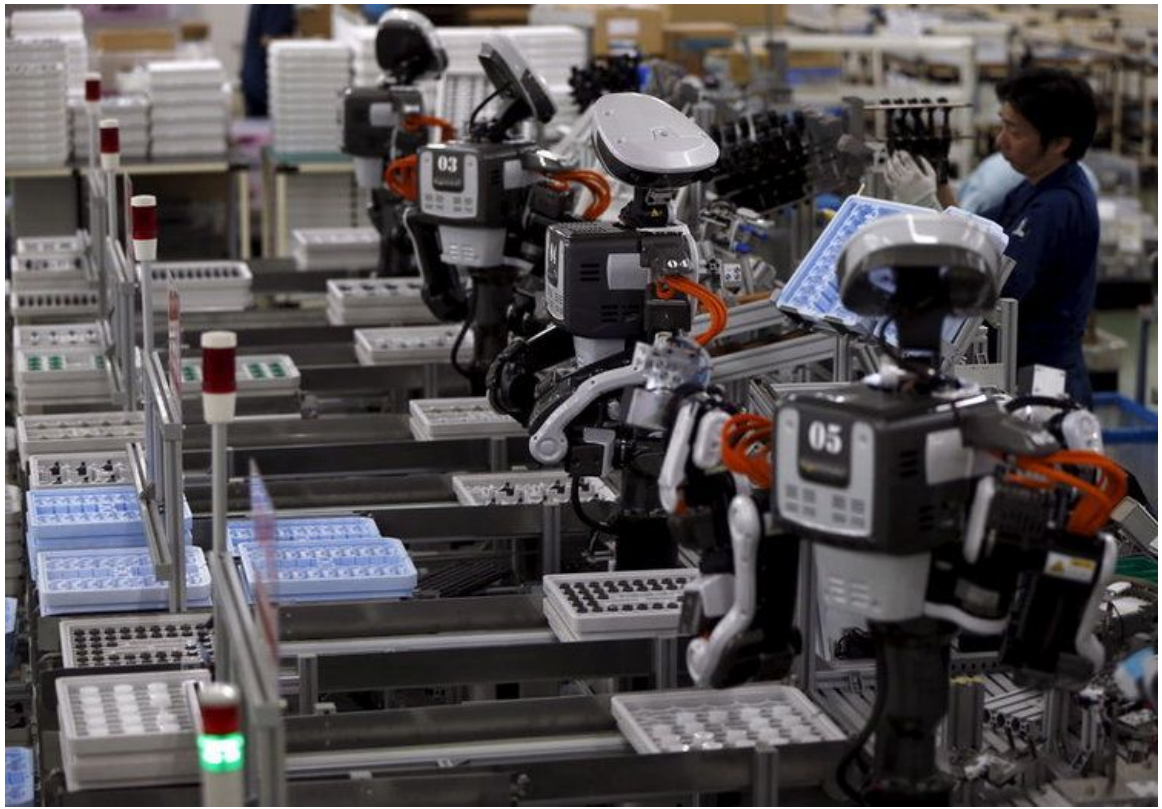
mantenimiento predictivo

perfiles de consumo

estimación consumo



Controversia: ¿escasez de trabajo? Nuevos tipos de trabajo



Nuevos roles de trabajo

Cambio en el paradigma educativo

- educación digital integral
- fomentos de carreras STEM (ciencia, tecnología, educación, matemáticas)

Controversias: uso militar - vigilancia

Autonomous Weapons: an Open Letter

*Obligatorio

To sign the open letter, please add your name below:

Full Name *

Job Title
(For example "Professor of Computer Science" or "AI grad student")

Email *

Affiliation

Continuar »

AI/Robotics Researchers:

Stuart Russell Berkeley, Professor of Computer Science, director of the Center for Intelligent Systems, and co-author of the standard textbook "Artificial Intelligence: a Modern Approach"
Nils J. Nilsson, Department of Computer Science, Stanford University, Kumagai Professor of Engineering, Emeritus, past president of AAAI
Barbara J. Grosz Harvard University, Higgins Professor of Natural Sciences, former president AAAI, former chair of IJCAI Board of Trustees
Tom Mitchell CMU, past president of AAAI, Fredkin University Professor and Head of the Machine Learning Department
Eric Horvitz, Microsoft Research, Managing director, Microsoft Research, past president of AAAI, co-chair of AAAI Presidential Panel on Long-term AI Futures, member of ACM, IEEE CIS
Martha E. Pollack University of Michigan, Provost, Professor of Computer Science & Professor of Information, past president of AAAI, Fellow of AAAS,

Other Endorsers:

Stephen Hawking Director of research at the Department of Applied Mathematics and Theoretical Physics at Cambridge, 2012 Fundamental Physics Prize laureate for his work on quantum gravity
Elon Musk SpaceX, Tesla, Solar City
Steve Wozniak, Apple Inc., Co-founder, member of IEEE CS
Jaan Tallinn co-founder of Skype, CSER and FLI
Frank Wilczek MIT, Professor of Physics, Nobel Laureate for his work on the strong nuclear force
Max Tegmark MIT, Professor of Physics, co-founder of FLI
Daniel C. Dennett, Tufts University, Professor, Co-Director, Center for Cognitive Studies, member of AAAI
Noam Chomsky MIT, Institute Professor emeritus, inductee in IEEE Intelligent Systems Hall of Fame, Franklin medalist in Computer and Cognitive Science
Barbara Simons IBM Research (retired), Past President ACM, ACM Fellow, AAAS Fellow
Stephen Goose Director of Human Rights Watch's

¿Cuáles son los usos legales que se permitirá en la robótica con el objeto de evitar su futuro uso, por ejemplo, como armas de guerras?

Who Wants to Be A Regulator: The IoT Security Game Show

Rachel Tobac @RachelTobac · 12 ago.

At @defcon hacking conference and just learned how easy it is to physically gain admin access on a voting machine that is used in 18 states. Requires no tools and takes under 2 minutes. I'm concerned for our upcoming elections.

Traducir Tweet

Screens are down at Gatwick Airport, so they're using whiteboards bit.ly/2nQWVod

Traducir Tweet

IoT Robot Vacuum Vulnerabilities Let Hackers Spy on Victims

UPDATEResearchers have uncovered vulnerabilities in a connected vacuum cleaner lineup that could allow attackers to eavesdrop, perform

Fukushima nuclear plant ordered to upgrade from Windows XP

48,000 PCs running on out-of-date operating system

A JAPANESE WATCHDOG has slammed the operators of the Fukushima Daiichi nuclear power plant after an audit revealed that most of its PCs run on Microsoft's Windows XP.

The plant's owner might have been expected to ensure that systems are up to date and as secure as possible after the meltdown of three of the plant's six nuclear reactors in March 2011. But apparently not.

Controversias éticas: caso sistemas recomendación

Caryn Vainio
@Hellchick

Seguir

For those of you who work in social media, I need to share the story of my friend who died, and I didn't know because algorithms.

Traducir Tweet

Caryn Vainio @Hellchick · 18 dic. 2017
I found out from a mutual friend on FB that he'd died, and had be
hospitalized. I was shocked. I NEVER saw this in my feed. Ever.

Traducir Tweet

6 221 1,4K

Caryn Vainio @Hellchick · 18 dic. 2017
So I flipped to his feed, and sure enough, there'd been a post in N
about him being in the hospital. I was never shown this post.

Traducir Tweet

How Target Figured Out A Teen Girl Was Pregnant Before Her Father Did

Kashmir Hill Forbes Staff
Welcome to The Not-So Private Parts where technology & privacy collide

Every time you go shopping, you share intimate details about your consumption patterns with retailers. And many of those retailers are studying those details to figure out what you like, what you need, and which coupons are most likely to make you happy. Target TGT +0.22%, for example, has figured out how to data-mine its way into your womb, to figure out whether you have a baby on the way long before you need to start buying diapers.

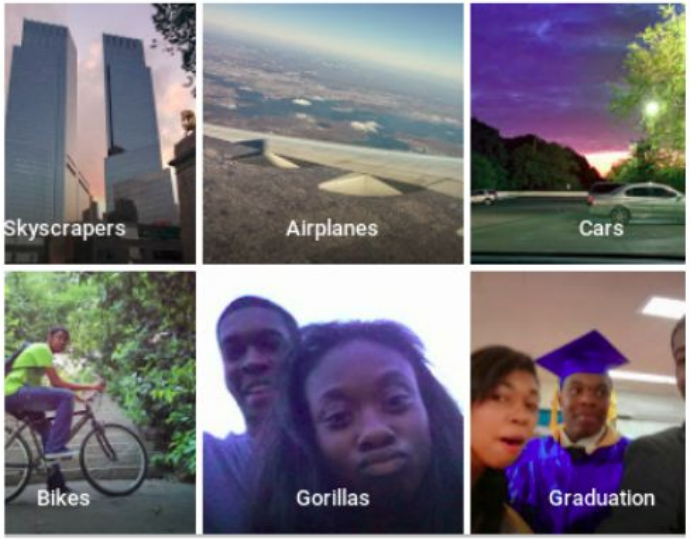
TARGET

Target has got you in its aim

Controversias: AI bias

With inclusion in mind, we can make better sensor technology as well as better training data and algorithms

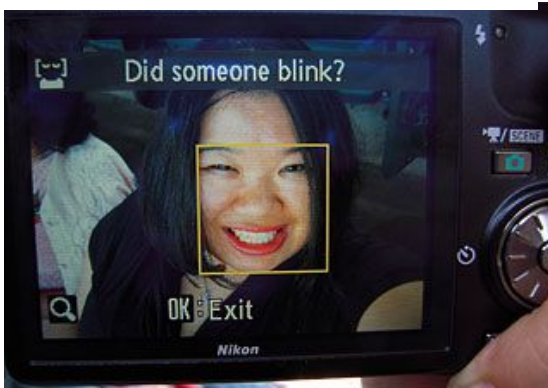
(Identificación de género)



Google apologizes for algorithm mistakenly calling black people 'gorillas'

The search giant is under fire after its Photo app offensively mislabeled user's photos. It points to another challenge Silicon Valley companies have to face when developing next-gen tech: sensitivity.

BY **RICHARD NIEVA** / JULY 1, 2015 5:32 PM PDT



Controversia: generación de fake-news

https://grail.cs.washington.edu/projects/AudioToObama/siggraph17_obama.pdf

Muchas gracias
¿preguntas?

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Conclusiones / preguntas

¿Cómo vamos asegurar el derecho a la privacidad de los ciudadanos? ¿Cómo educamos para que cuiden su privacidad?

¿Es ético utilizar voto/boleta electrónica en la emisión del voto cuando está confirmado que no es un sistema seguro, por lo tanto, está en peligro el secreto del voto y su integridad?

¿Hasta qué punto dejaremos que las tecnologías gestionen la democracia por nosotros?

¿Cómo vamos a evitar el abuso de noticias falsas o tendenciosas que pueden influir gravemente en la opinión pública?

¿Cuáles son los usos legales que se permitirá en la robótica con el objeto de evitar su futuro uso, por ejemplo, como armas de guerras? ¿O procesar y agilizar procesos judiciales usando IA?

Quienes diseñan AI, ML DL son PERSONAs. Se deben tomar recaudos para evitar el bias en IA

Las aplicaciones IA deben respetar nuestros derechos humanos (privacidad, vida, etc)

Big data: 4 V

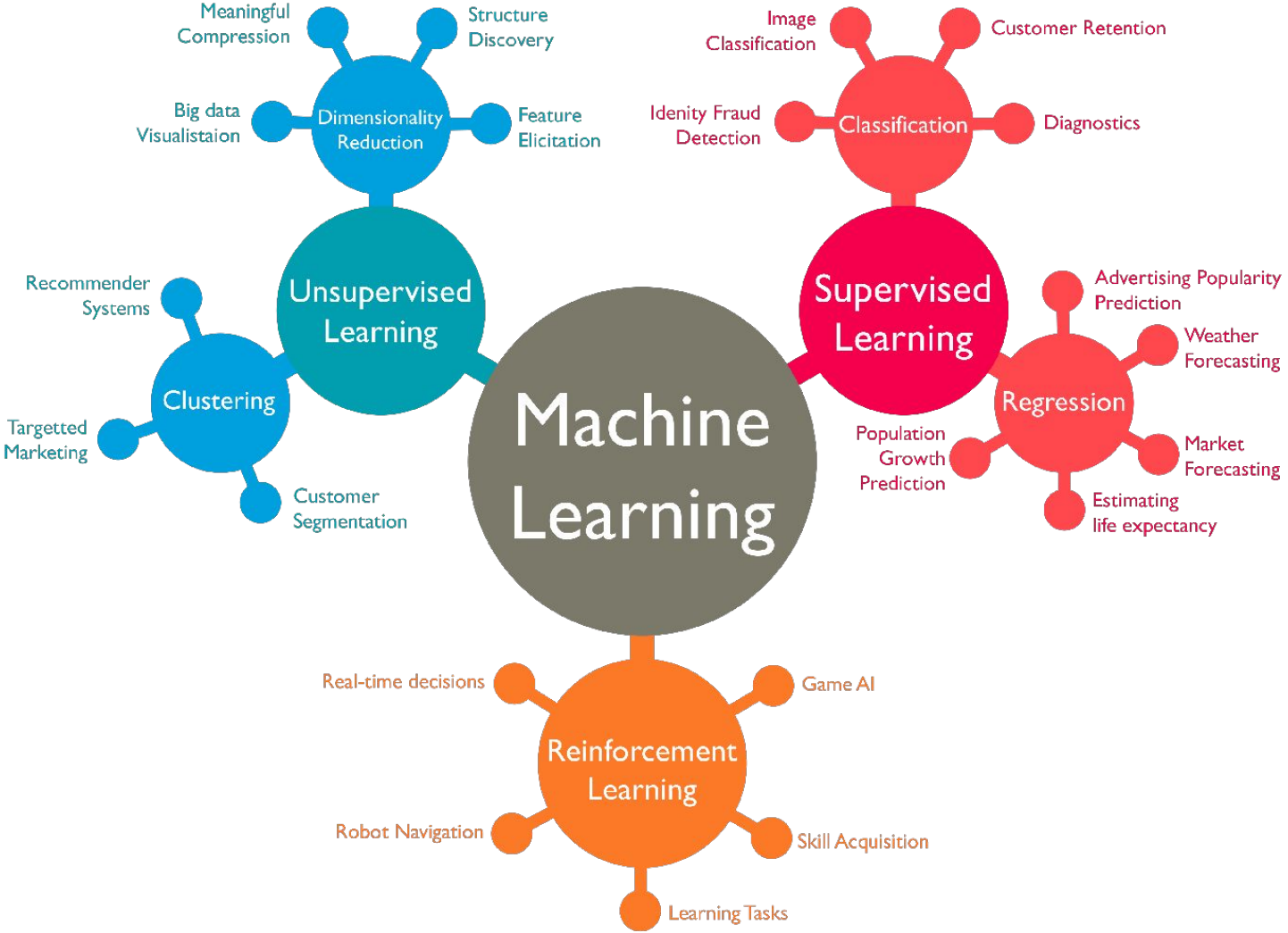
Volumen

Velocidad

Variedad

Valor/Veracidad

(arquitectura distribuida)


Machine Learning
Unsupervised Learning
Dimensionality Reduction
Meaningful Compression
Structure Discovery
Big data Visualistaion
Feature Elicitation
Clustering
Recommender Systems
Targetted Marketing
Customer Segmentation
Supervised Learning
Classification
Image Classification
Customer Retention
Idenity Fraud Detection
Diagnostics
Regression
Advertising Popularity Prediction
Weather Forecasting
Population Growth Prediction
Market Forecasting
Estimating life expectancy
Reinforcement Learning
Real-time decisions
Game AI
Robot Navigation
Skill Acquisition
Learning Tasks