

Desmitificando la inteligencia artificial

Víctor Orozco

17 de marzo de 2020

Nabenik

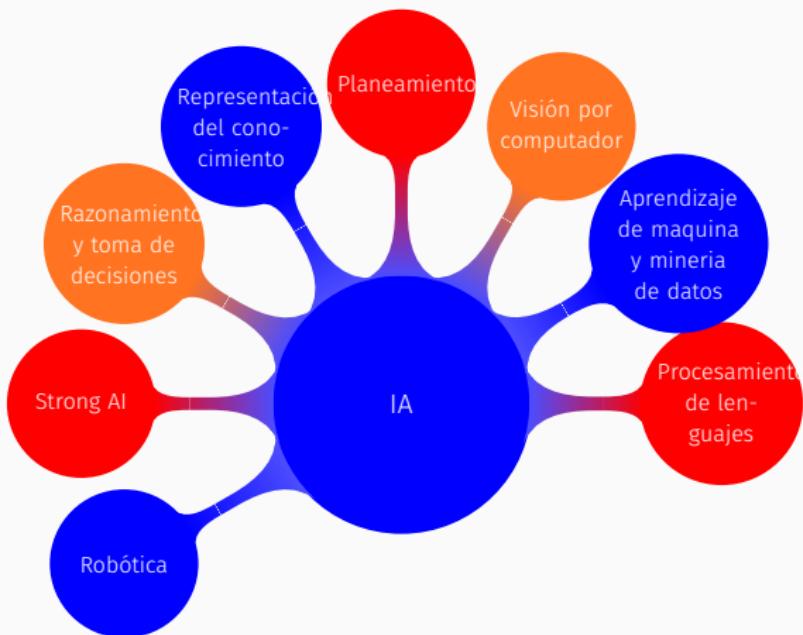
Introducción

- Java Champion
- Ex becario OAS-GCUB
- Dukes Choice Award
2016 -GuateJUG-
- CTO/Founder -Nabenik-
- @tuxtor
- The J*

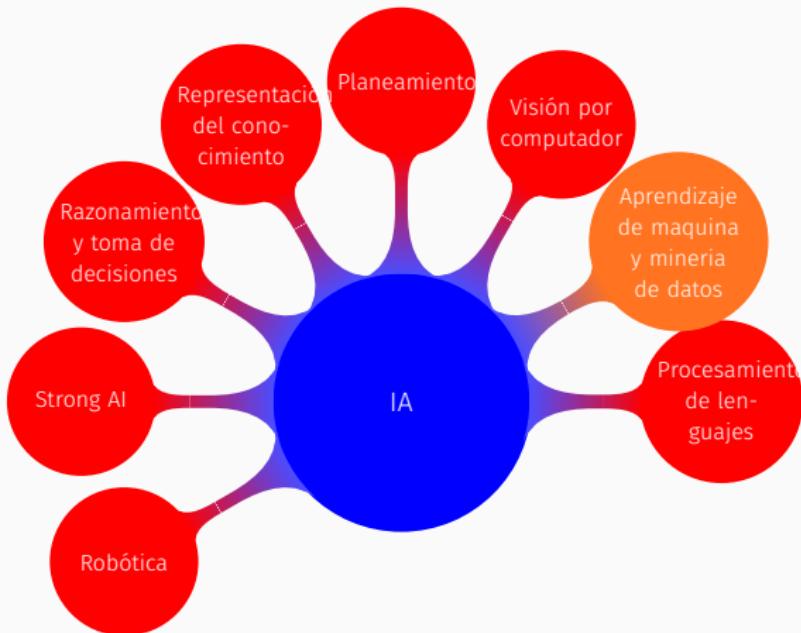


- Entender y construir entidades inteligentes.
- Primeros pasos en robótica
- Programas que puedan/sepan reaccionar ante incertezas (CS)

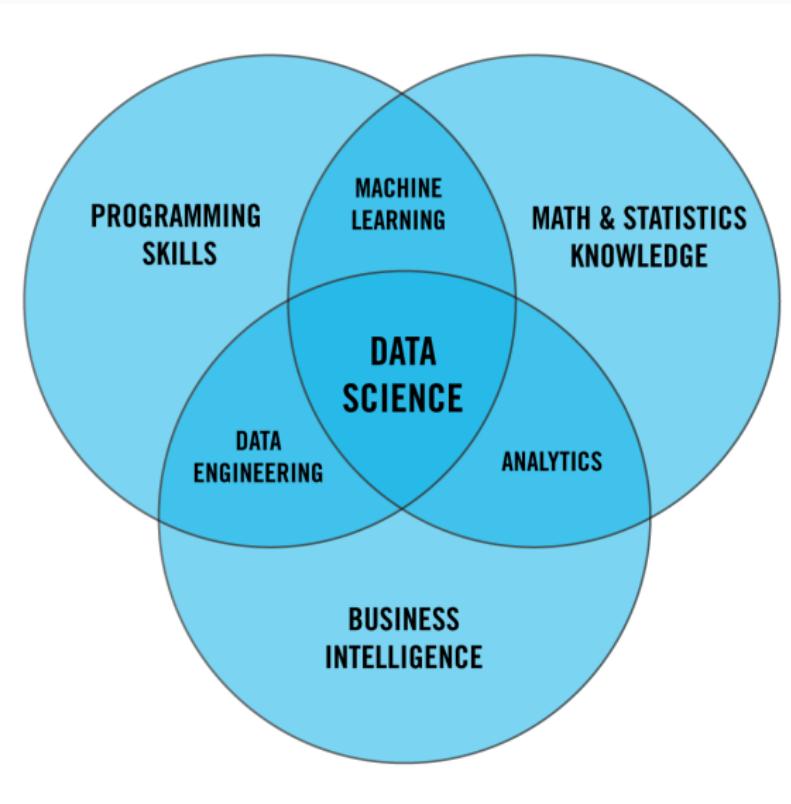
Ramas clásicas



Ramas clásicas



Ramas clásicas



¿Por qué?

Motivación

FORTUNE

NEWS POPULAR VIDEOS FORTUNE 500

Artificial Intelligence OCTOBER 26, 2016

More Chip Sector Consolidation as Macom Buys Applied Micro 8:34 AM EST

What Ashton Kutcher Said in Defense of Airbnb to a Code Pink Protestor 8:30 AM EST

These 'Never Trumpers' Are Now Saying Maybe to White House Jobs 7:35 AM EST

Carrie Underwood: Not Your Typical Athleisure Celeb 7:30 AM EST

Citi and J.P. Morgan Just Topped the Global Regulators List of Important Banks 7:24 AM EST

Facebook Plans to Add 500 New Staff in Britain in 2017 7:08 AM EST

Blackstone Is Reportedly in Talks to Sell \$2.3B in Property to This Chinese Group 6:58 AM EST

India Train Crash Death Toll Hits 142 6:24 AM EST

Machine learning will drop the cost of making predictions, but raise the value of human judgement.

To really understand the impact of artificial intelligence in the modern world, it's best to think beyond the mega-research projects like those that helped Google recognize cats in photos.

According to professor Ajay Agrawal of the University of Toronto, humanity should be pondering how the ability of cutting edge A.I. techniques like **deep learning**—which has boosted the ability for computers to recognize patterns in enormous loads of data—could reshape the global economy.

Making his comments at the Machine Learning and the Market for Intelligence **conference** this week by the Rotman School of Management at the University of Toronto, Agrawal likened the current boom of A.I. to 1995, when the Internet went mainstream. Gaining enough

Photograph by Agiolo Mike — Getty Images/Photo Researchers RM

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Fortune



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Fortune



Motivación

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Artificial intelligence

March of the machines

What history tells us about the future of artificial intelligence—and how society should respond

Jun 25th 2016 | From the print edition

 Pictorial Press

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The Economist Events

INNOVATION SUMMIT 2017

We're all digital now

EXPERTS warn that "the substitution of machinery for human labour" may "render the population redundant". They worry that "the discovery of this mighty power" has come "before we knew how to employ it rightly". Such fears are expressed today by those who

Motivación

The image shows a mobile application interface for a music streaming service. At the top, there is a search bar with the placeholder "Search" and an "UPGRADE" button. Below the search bar, a navigation menu includes "OVERVIEW", "CHARTS", "GENRES & MOODS", "NEW RELEASES", "DISCOVER" (which is underlined in green), and "CONCERTS".

The main content area features a section titled "New Releases For You" with four cards:

- Your Release Radar**: An abstract graphic with blue wavy lines.
- 20... al Mundo de los Sueños (Live)** by **Saurom**: Cover art shows a person in a red suit on stage.
- A Arte De Os Paralamas Do Sucesso**: Cover art features three people in a yellow circle.
- XXI - Klavier** by **Rammstein**: Cover art features the Rammstein logo and the word "KLAVIER".

Below this section is another titled "Similar to Ximena Sariñana" with four cards:

- A red card with the text "HABLA CON MI" and "HABLA CON MI" at the bottom.
- Siddhartha**: Cover art shows a person in a blue robe against a background of water ripples.
- Las Danielas**: Cover art shows a person in a white outfit with a red lightning bolt graphic.

At the very bottom, there is a navigation bar with icons for "e Noise", a plus sign, a back arrow, a play/pause button, a forward arrow, and a refresh/circular arrow.

Motivación

More items to consider [See more](#)



Inspired by your browsing history [See more](#)



Aprendizaje

Mejores predicciones

Inferencia

BACKGROUND KNOWLEDGE



NEW INFORMATION



INFERENCE



Inferencia

- Estadística inferencial (Excel, BI)
 - Regresión de datos
 - Redes bayesianas
- **Aprendizaje de maquina** (Sistemas de recomendación, chatbots)
 - Perceptrones
 - Redes neurales
 - Clustering
 - KNN
 - SNA

Mejores predicciones

- Venta (Chatbots, sistemas de recomendación)
- Fidelización (Software consciente de contexto, análisis de redes sociales)
- Producción (Redes neurales, redes bayesianas)
- Análisis (Map-Reduce (aka Big Data))

Recommending for the World

#AlgorithmsEverywhere

by [Yves Raimond](#) and [Justin Basilico](#)



The Netflix experience is driven by [a number of Machine Learning algorithms](#): [personalized ranking](#), [page generation](#), [search](#), [similarity](#), [ratings](#), etc. On the 6th of January, we

Inferencia (retos)

- Problema
- Modelo
- Implementación

1-2-3 Machine Learning

1. Normalizar los datos
2. Crear el modelo
3. Entrenar el modelo
4. Comprobar su funcionamiento

Que

- Probabilidad
- Estructura
- Conceptos ocultos (Hidden concepts)

Donde

- Supervised learning (objetivo)
- Unsupervised learning (conceptos ocultos)
- Reinforcement learning (feedback)

Para que

- Predicciones
- Diagnóstico
- Sumarizaciones

Como

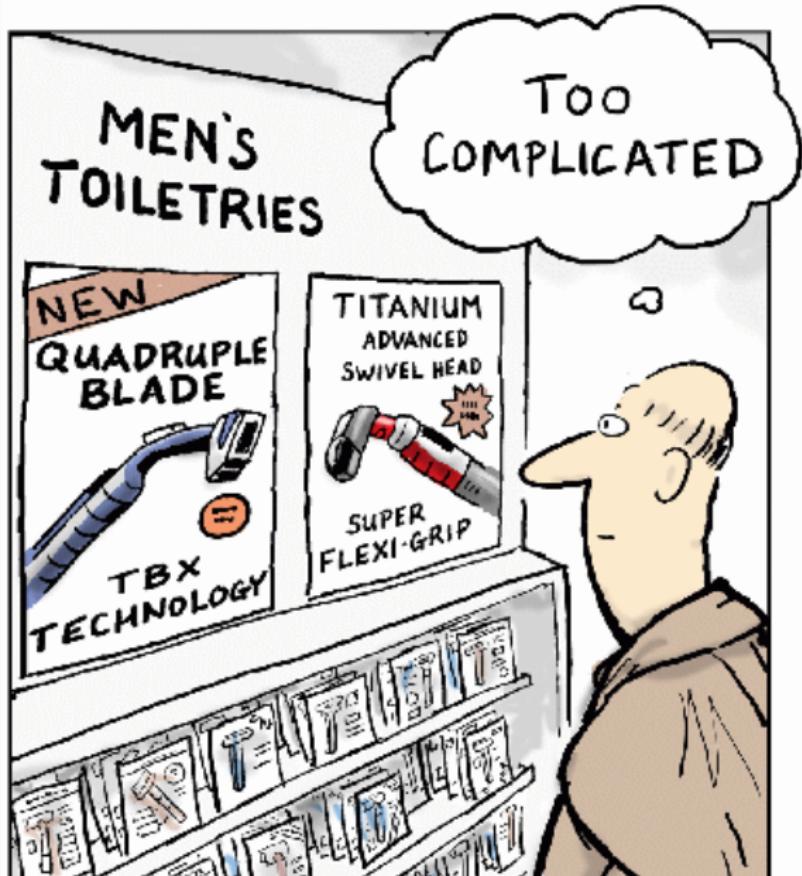
- Pasivo (Observador)
- Activo
- Offline
- Online

Salida

- Clasificación (Binario)
- Regresión (Continuo)

Detalles

- Generativo (Generalizaciones)
- Discriminativo (Distinguir)



Navaja de Occam

"Pluralitas non est ponenda sine necessitate"

"Plurality is not to be posited without necessity"

Navaja de Occam (Español)

Cuando se tienen dos teorías que obtienen las mismas predicciones, generalmente la más simple es la mejor

Bibliotecas

Principales

- DeepLearning4J <https://deeplearning4j.org/>
- BID Data Project
<http://bid2.berkeley.edu/bid-data-project/>
- Neuroph
<http://neuroph.sourceforge.net/index.html>
- Smile <http://haifengl.github.io/smile/>

Complementarias

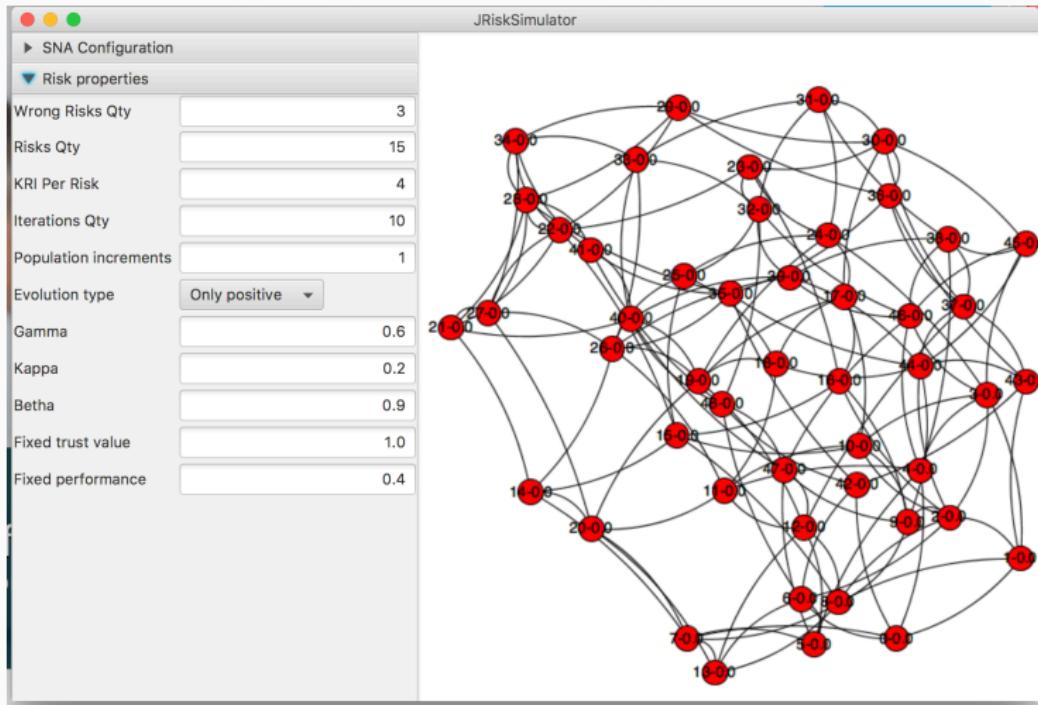
- Commons Math <http://commons.apache.org/proper/commons-math/>
- Eclipse Collections
<https://www.eclipse.org/collections/>

- AmazonML
<https://aws.amazon.com/machine-learning/>
- Bluemix - Watson <https://www.ibm.com/cloud-computing/bluemix/watson>
- Oracle Advanced Analytics <https://www.oracle.com/database/advanced-analytics/index.html>

Experiencias previas

- **Problema:** Mejorar las recomendaciones en ISO 27001
- **Modelo:** Clasificación inmediata mediante análisis de redes sociales
- **Implementación:** JGraph + JUNG + Commons Math + Java FX

JRiskSimulator



- **Problema:** Adaptar la recomendación de un profesional de acuerdo a las recomendaciones de mis amigos
- **Modelo:** Clasificación inmediata mediante perceptrones + Análisis de redes sociales
- **Implementación:** Neuroph + Commons Math + Lucene Search + Java EE

The screenshot shows the Medmigo website homepage. At the top left is the Medmigo logo (a blue stylized 'M' icon followed by the word 'Medmigo'). To the right are three buttons: 'Para profesionales' (in a blue box), 'Español (ES) ▾' (with a small flag icon), and 'Iniciar Sesión' (with a lock icon). Below the header is a search bar with the placeholder 'Busca un profesional de la salud' and a 'Buscar' button. A large, semi-transparent dark overlay covers the middle of the page, containing the text 'Confía en Medmigo' in white, bold, sans-serif font, followed by a smaller line of text: 'Busca profesionales de la salud en los que tus amigos, otros profesionales de la salud y la comunidad confian'. At the bottom of this overlay are four small white circles, with the fourth one being filled black. The background of the page shows a blurred photograph of a smiling man with grey hair and a mustache, wearing a blue shirt, standing in what appears to be a medical office. In the background, a woman and a young girl are visible, also smiling.

Para profesionales

Español (ES) ▾

Iniciar Sesión

Busca un profesional de la salud

Buscar

Confía en Medmigo

Busca profesionales de la salud en los que tus amigos, otros profesionales de la salud y la comunidad confian

● ● ● ●

- **Problema:** Indexar n cantidad de biblias en un metabuscador que soporte "palabras parecidas"
- **Modelo:** Binary tree + Tokenization + Levenshtein distance + Lazy data fetch
- **Implementación:** NLP + Lucene Search + Java EE

The screenshot shows a dark-themed website for "BIBLE GENERATION". At the top right are links for "Cerrar Sesión" (Logout) and a user icon. The main title "BIENVENIDO A BIBLE GENERATION" is displayed prominently in blue. Below it is a subtitle: "Es una generación que vive completamente convencida y apasionada por la Biblia, creyendo que esta, es la Palabra de Dios." A search bar at the bottom has the placeholder text "jesub". To the right of the search bar is a blue "BUSCAR" button. The main content area displays a list of search results, each consisting of a snippet of text from the Bible followed by a small decorative icon.

jesub

BUSCAR

Cndo Jesús ✨tnta gnt, subió a mntaña y c sentid. Los discípulos se le aceraron.

Ntonces Jesús c subió a la 🏔 y l viento c calmó. Los discípulos staban muy asmrados 😱

Después Jesús dpidió a la gnt, subió a l 🏔 y c fue al piblo d Magadán.

Cndo Jesús staba subiendo a la brk 🏔 I 🌞 q abra staba sno le rogó q lo djara cn él.

Entonces Jesús ls dejó, vivió a subir a la brk 🏔 y c fue al otro lado d lgo.

Daps l diablo 🤢lvió a Jesús a la ciud d Crusilén. Allí lo subió a la part ms alta d lmpio 🏛

Cndo tda la gnt c hbía ido, Jesús subió slo a 1 crro pra orar 🙏. Allí stuvo orando 🙏 hasta q anochció.

Jesús salió d allí y llgó a la orilla d lgo d Galilea. Luego subió a 1 crro y c sntó.

Fin

Gracias

- me@vorozco.com
- <http://vorozco.com>
- <http://github.com/tuxtor/slides>



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