

Hombres y máquinas

Entre la competencia y la cooperación en el Nicho Cognitivo.

Juan C. Valle Lisboa



The cognitive niche: Coevolution of intelligence, sociality, and language

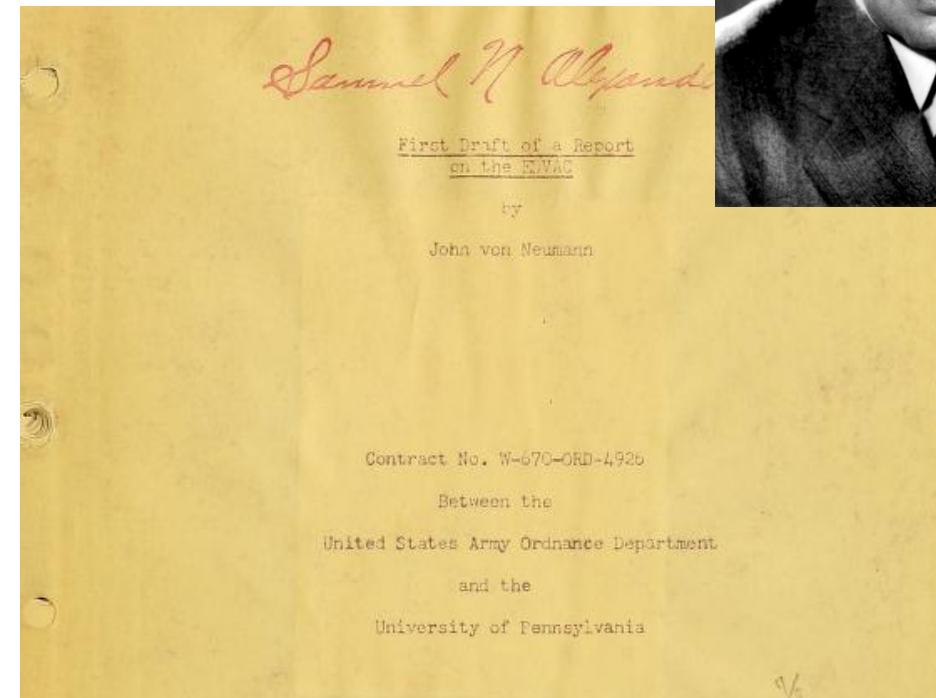
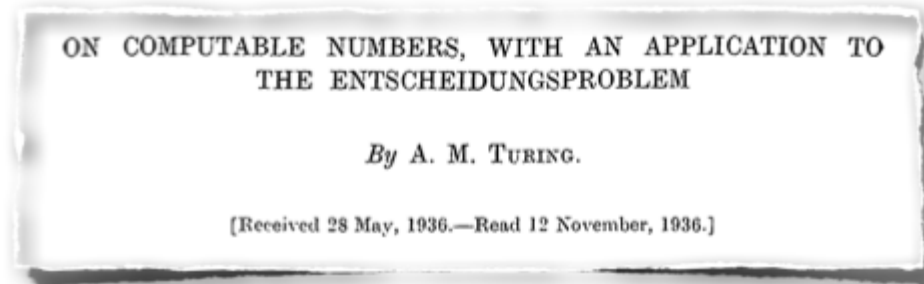
Steven Pinker¹

Department of Psychology, Harvard University, Cambridge, MA 02138

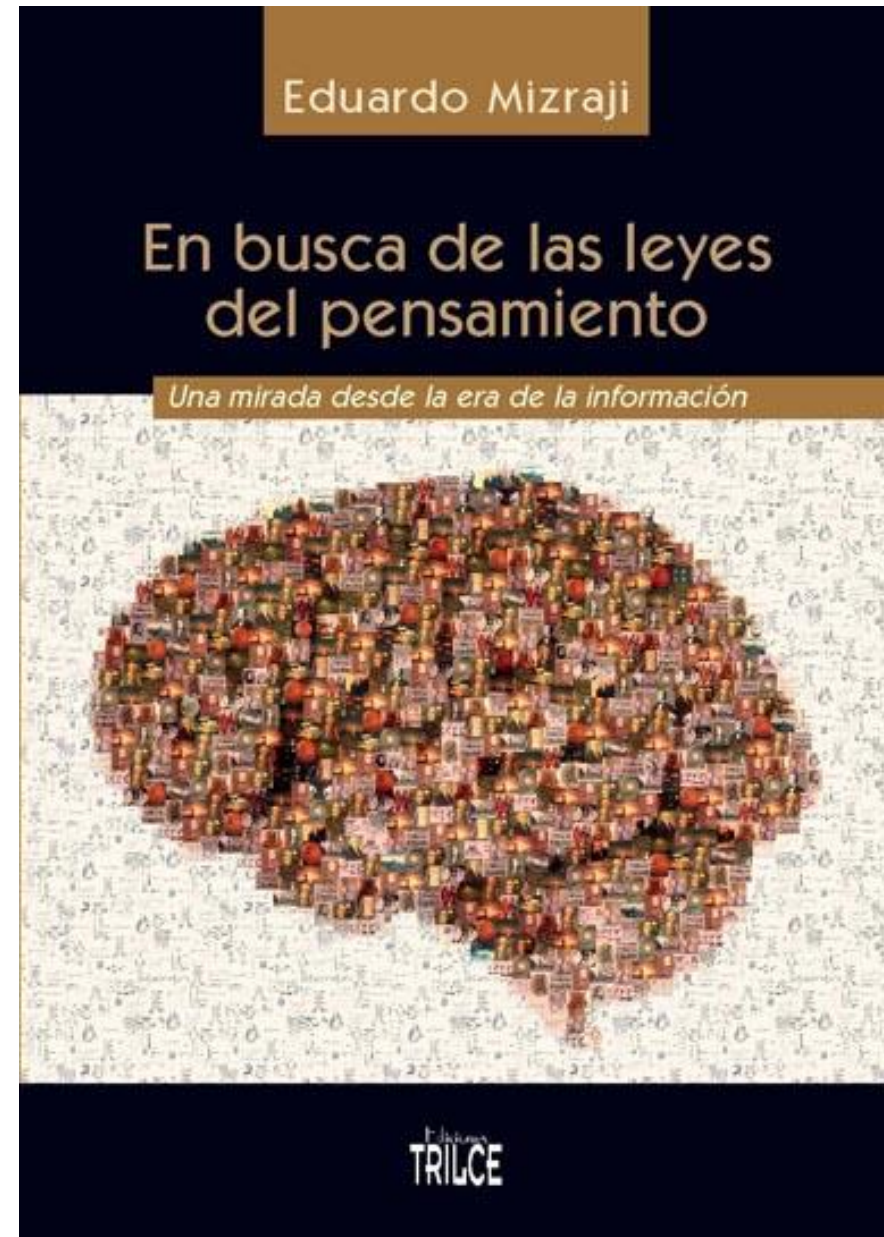
¿Son las inteligencias artificiales nuevas especies que ocupan el mismo nicho?

¿Llevará esto a la exclusión competitiva?

El origen de la especie desafiante

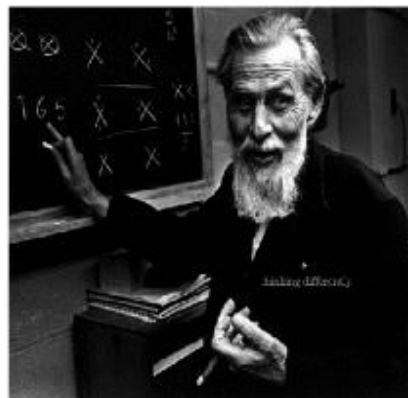


...aunque
viene de
tiempos
inmemoriales



El origen de la especie desafiante

Las primeras redes neuronales
(McCullochs & Pitts, 1943)



activity. Certainly for the psychiatrist it is more to the point that in such systems "Mind" no longer "goes more ghostly than a ghost." Instead, diseased mentality can be understood without loss of scope or rigor, in the scientific terms of neurophysiology. For

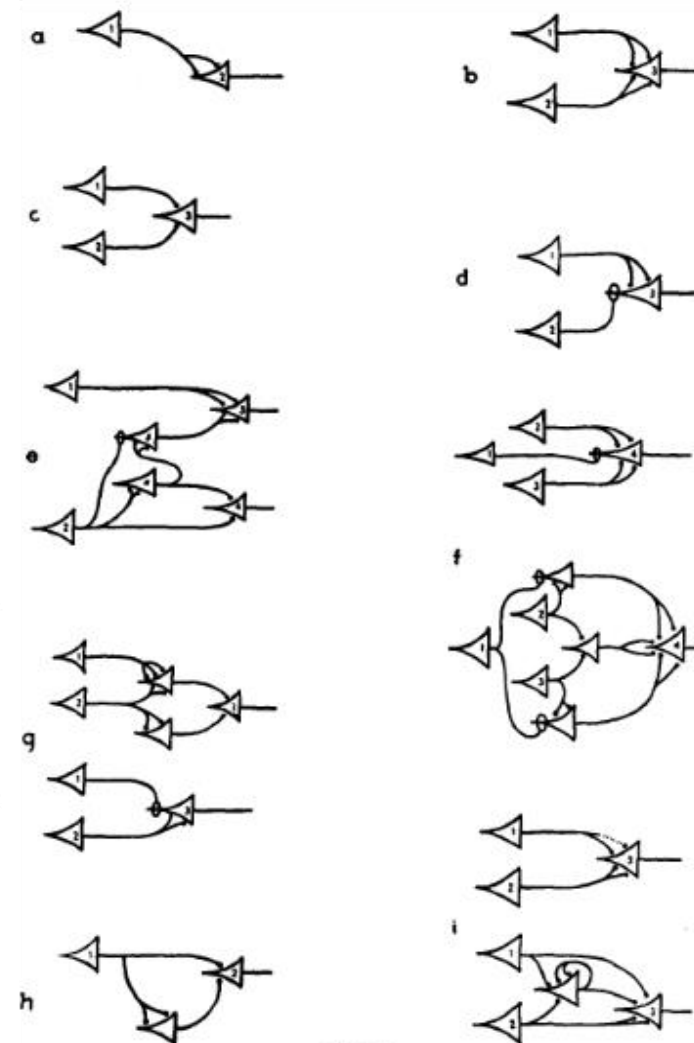
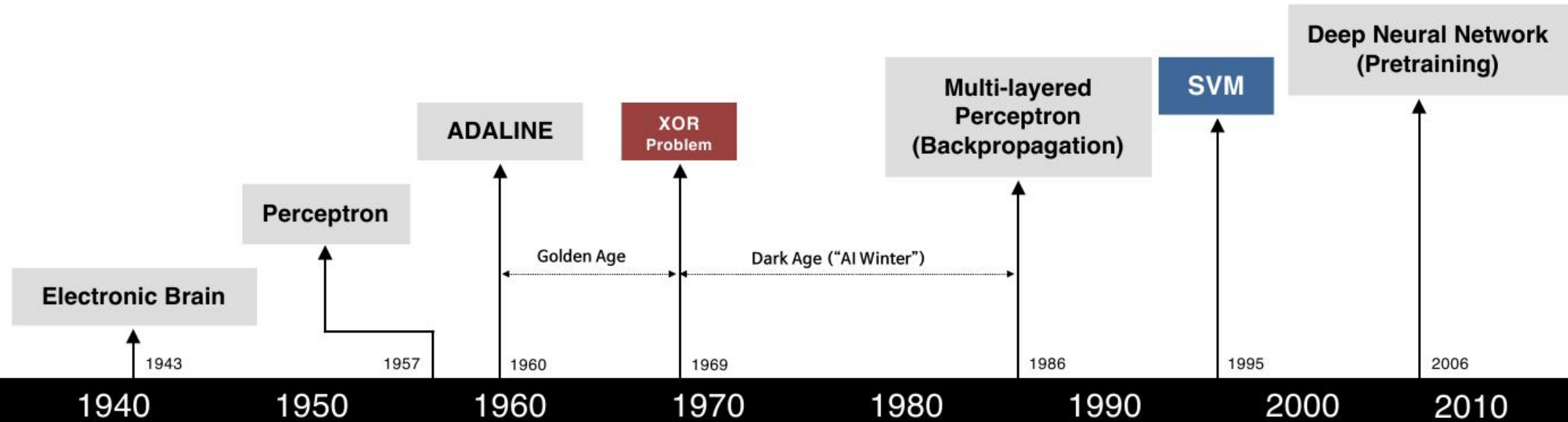


FIGURE 1

Brief History of Neural Network

DEVIEW
2015



S. McCulloch – W. Pitts



F. Rosenblatt



B. Widrow – M. Hoff



M. Minsky – S. Papert



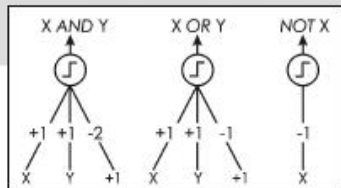
D. Rumelhart – G. Hinton – R. Williams



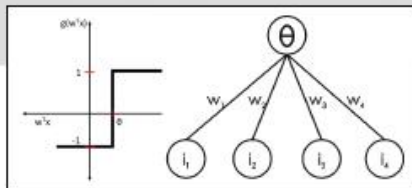
V. Vapnik – C. Cortes



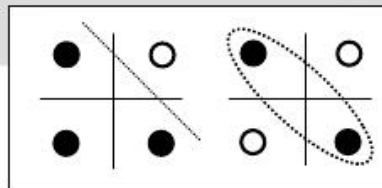
G. Hinton – S. Ruslan



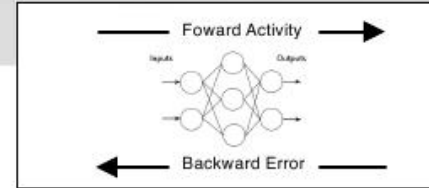
- Adjustable Weights
- Weights are not Learned



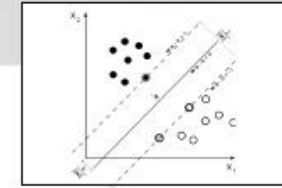
- Learnable Weights and Threshold



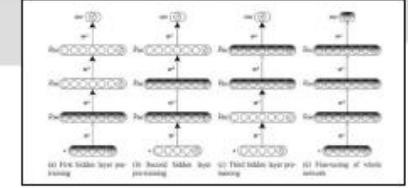
- XOR Problem



- Solution to nonlinearly separable problems
- Big computation, local optima and overfitting



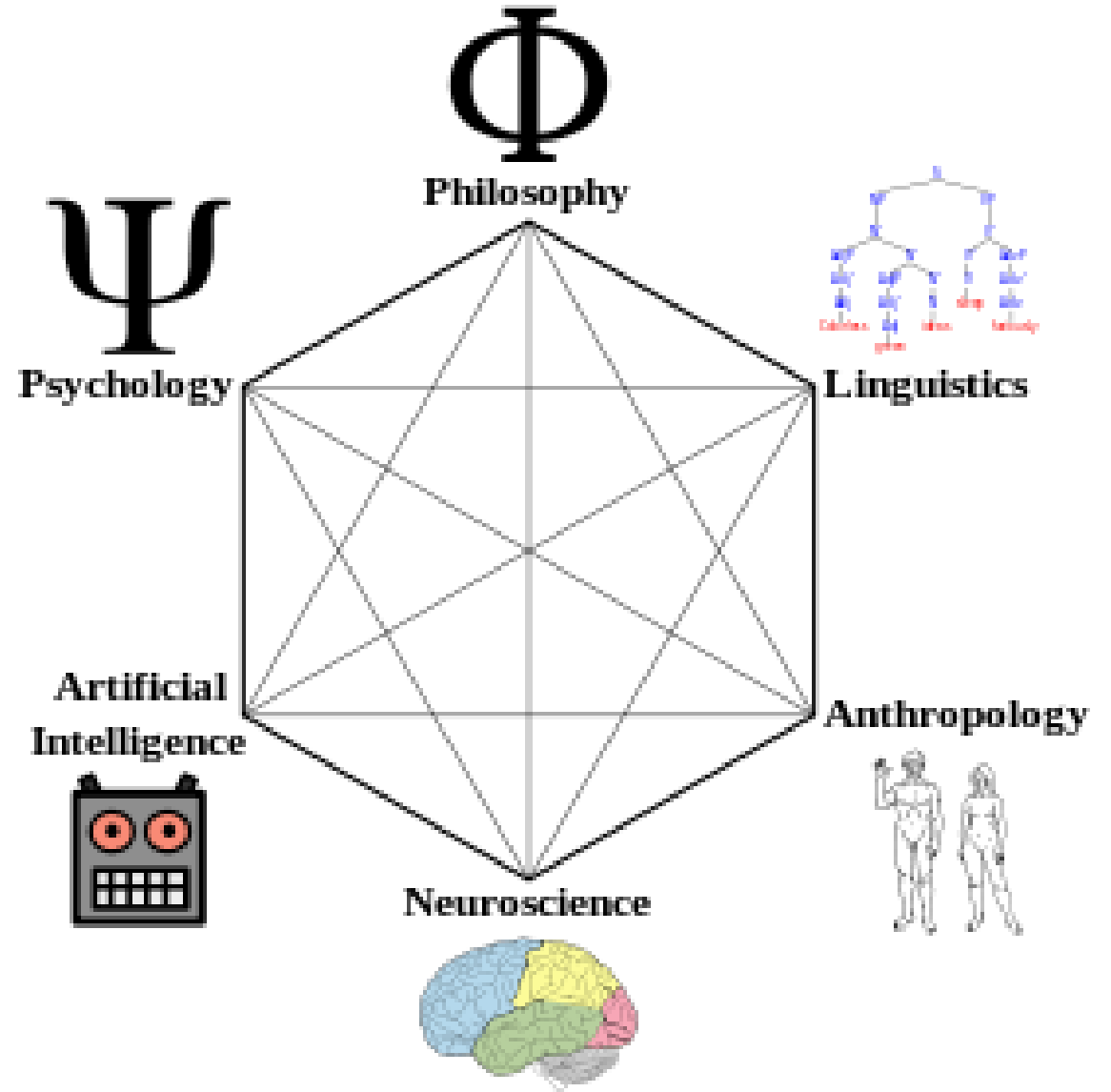
- Limitations of learning prior knowledge
- Kernel function: Human Intervention



- Hierarchical feature Learning

Idas y vueltas de la historia y las Ciencias Cognitivas

Entre reglas y estadística
(o empirismo y
racionalismo, o natura y
nurtura)



Machine Intelligence LANDSCAPE

CORE TECHNOLOGIES

ARTIFICIAL INTELLIGENCE

IBM Watson
Numenta
Cycorp
Reactor
MetaMind
ai-one
Research
SCALED
INTELLIGENCE

DEEP LEARNING

vicarious
facebook
Google
SKYMINI
Vision Factory
Baidu
ersatz
SignalSense

MACHINE LEARNING

rapidminer
Oxdata
Liftgate
AdaptML
Context
DATA
Sense
Alone

NLP PLATFORMS

cortical.io
LUMINOSO
idibon
wit.ai
Maluba

PREDICTIVE APIS

AlchemerAPI
Google
ALGORITHMIA
PredictionIO
MINDOS
big
indico
Expect
Labs

IMAGE RECOGNITION

clarifai
DNNresearch
VISENZE
MADBITS
DEXTERO
lookflow

SPEECH RECOGNITION

GRIDSPACE
popUP archive
NUANCE

RETHINKING ENTERPRISE

SALES

Predict
RelateIQ
CLARABOICE
infer
AVISO
NGDATA
FRAMED
causata

SECURITY / AUTHENTICATION

CROSSMATCH
CYCLANCE
conjur
BITSIGHT
bionym

FRAUD DETECTION

sift science
ThreatMetrix
Brighterion
SOCURE
feedzai
verafin

HR / RECRUITING

TalentBin
predikt
gild
Connectifier
entelo
Connectifier
energize

MARKETING

brightfunnel
CommandIQ
RADIUS
Tellport
bloomreach
AIRPR
people pattern
Predictor

PERSONAL ASSISTANT

Siri
Cortana
tempo
KASISTO
VIV
Google now
cleversense
Rebinlabs
fuse machines
CLARA LABS

INTELLIGENCE TOOLS

ADATAQ
Palantir
Quid
FirstRain

RETHINKING INDUSTRIES

ADTECH

METAMARKETS
rocketfuel
ADBRAIN
dstillery
YieldMo

AGRICULTURE

BLUE RIVER
celeres imaging
THIS CLIMATE CORPORATION
Tule

EDUCATION

edclara
KNEWTON
coursera
Idaptive

FINANCE

Bloomberg
alphasense
Dataminr
KENSHC
minotabrook
BINATIX

LEGAL

Lex Machina
COUNSELYTICS
JUDICATA
Diligence Eagle
brightleaf
RAVEL
Brevia

MANUFACTURING

SIGHT MACHINE
MICROSCAN
IVISYS
BRIGHT BROS

MEDICAL

Parzival
Genescent
grandmed table
transcriptic
ZEPHYR
bina
TUTE

OIL AND GAS

kaggle
TACHYUS
Futura
AYASDI
biota

MEDIA / CONTENT

Outbrain
SAILTHRU
Narrative Science
Prismatic
newsie
wovii
Owls
Sewery

CONSUMER FINANCE

affirm
LendingClub
inVenture
GUARD
Kabbage

PHILANTHROPIES

DataKind
DATA GUILD
thorn

AUTOMOTIVE

Google
T
RACER
Cruise

DIAGNOSTICS

enlithic
lumiat
3SCAN
ENTOP

RETAIL

BAY SENSORS
PRISM SKYLABS
elect
euclid

RETHINKING HUMANS / HCI

AUGMENTED REALITY

AR
blippar
PIETRA
layar

GESTURAL COMPUTING

THALMIC LABS
Leap
GestureTech
omek
LEAP
3Gear
nod

ROBOTICS

intel
iRobot
jibo
andri

EMOTIONAL RECOGNITION

affectiva
cogito

SUPPORTING TECHNOLOGIES

HARDWARE

NVIDIA
QUALCOMM
rigit

DATA PREP

TRIFACTA
tamr
Paxata
Alation

DATA COLLECTION

diffbot
CrowdFlower
WorkFusion
kimono
Connatate
Import

very high level representation:

MAN SITTING ...

... etc ...

slightly higher level representation

raw input vector representation:

$\mathcal{X} = \begin{bmatrix} 23 & 19 & 20 & \dots & 18 \end{bmatrix}$
 $x_1 \quad x_2 \quad x_3 \quad \dots \quad x_n$

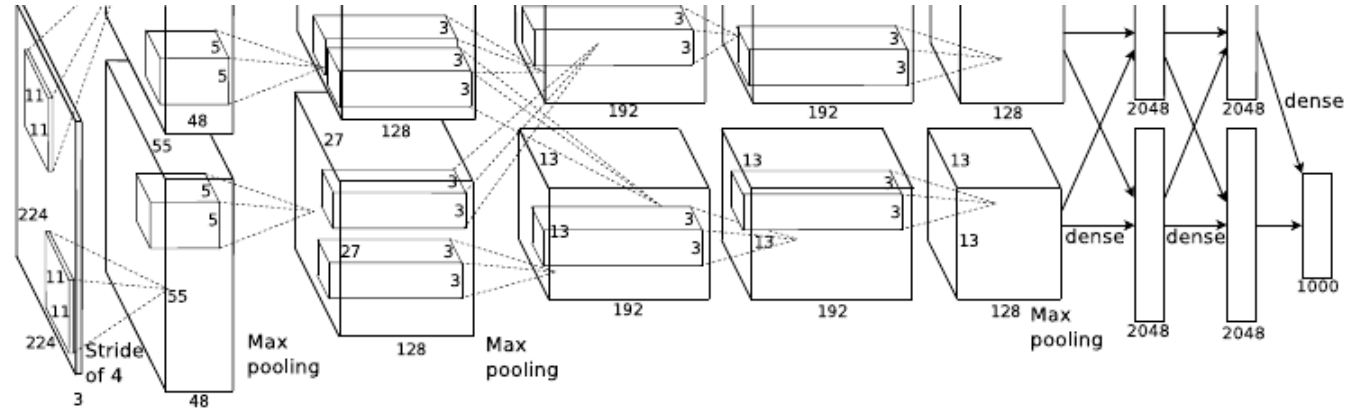


Figure 2: An illustration of the architecture of our CNN, explicitly showing the delineation of responsibilities between the two GPUs. One GPU runs the layer-parts at the top of the figure while the other runs the layer-parts at the bottom. The GPUs communicate only at certain layers. The network's input is 150,528-dimensional, and the number of neurons in the network's remaining layers is given by 253,440–186,624–64,896–64,896–43,264–4096–4096–1000.

El secreto: estadística profunda y muchos datos

Las redes no hacen todo

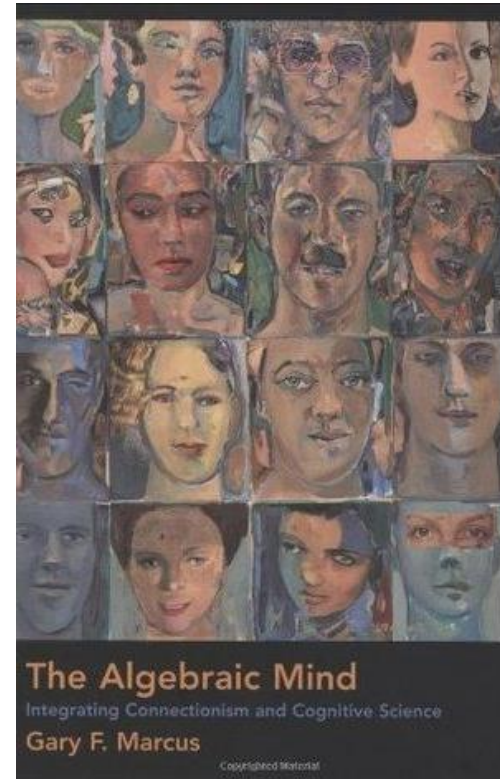


Tech Talk | Robotics | Artificial Intelligence

Will the Future of AI Learning Depend More on Nature or Nurture?

By [Jeremy Hsu](#)

Posted 6 Oct 2017 | 21:00 GMT



In press at *Behavioral and Brain Sciences*.

Building Machines That Learn and Think Like People

Brenden M. Lake,¹ Tomer D. Ullman,^{2,4} Joshua B. Tenenbaum,^{2,4} and Samuel J. Gershman^{3,4}

Geoffrey Hinton Says AI Needs To Start Over

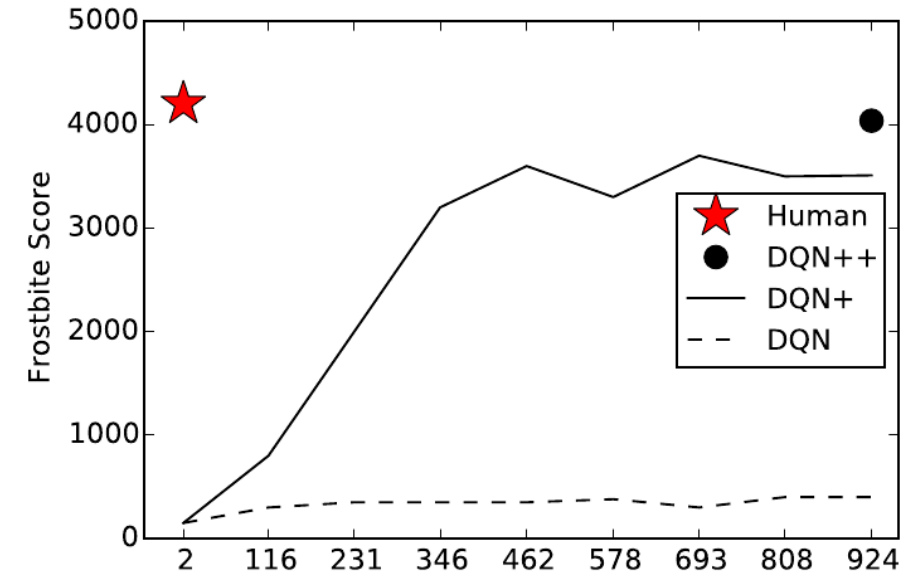
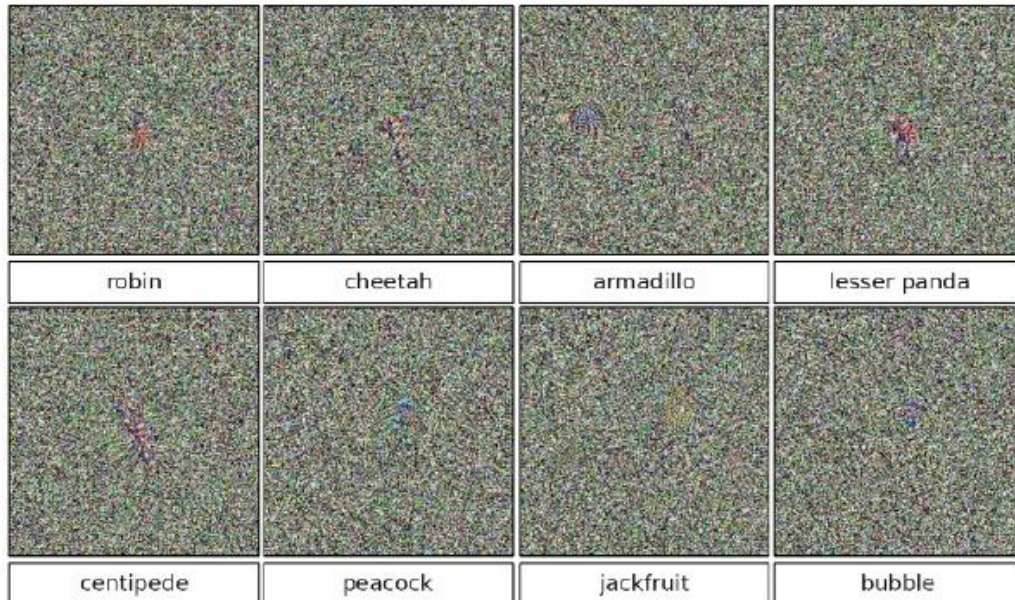
Written by Mike James

Monday, 18 September 2017

Geoffrey Hinton is widely recognized as the father of the current AI boom. Decades ago he hung on to the idea that back propagation and neural networks were the way to go when everyone else had given up. Now, in an off-the-cuff interview, he reveals that back prop might not be enough and that AI should start over.



Algunos problemas de las redes neuronales



a woman riding a horse on a dirt road



an airplane is parked on the tarmac at an airport



a group of people standing on top of a beach



33 ms 467 ms
66 ms 434 ms
132 ms 368 ms
264 ms 236 ms

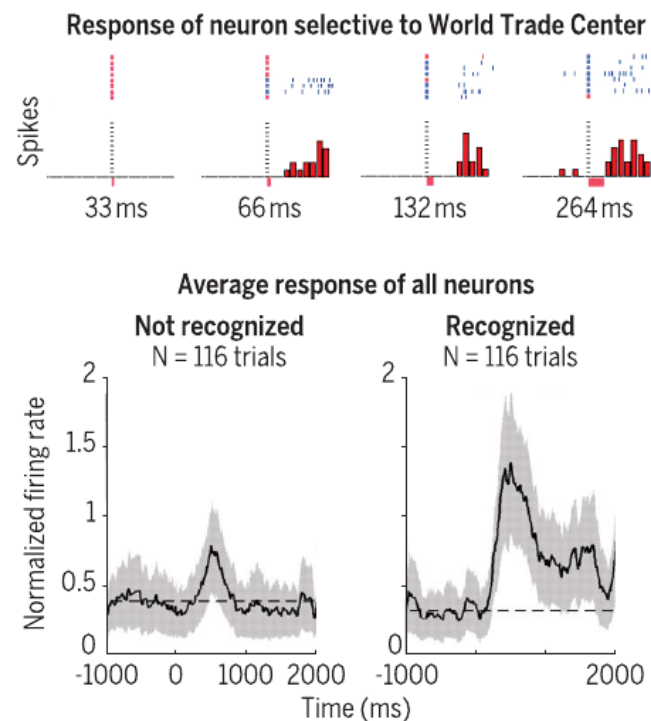


Fig. 2. Global availability: Consciousness in the first sense (C1). Conscious subjective percepts

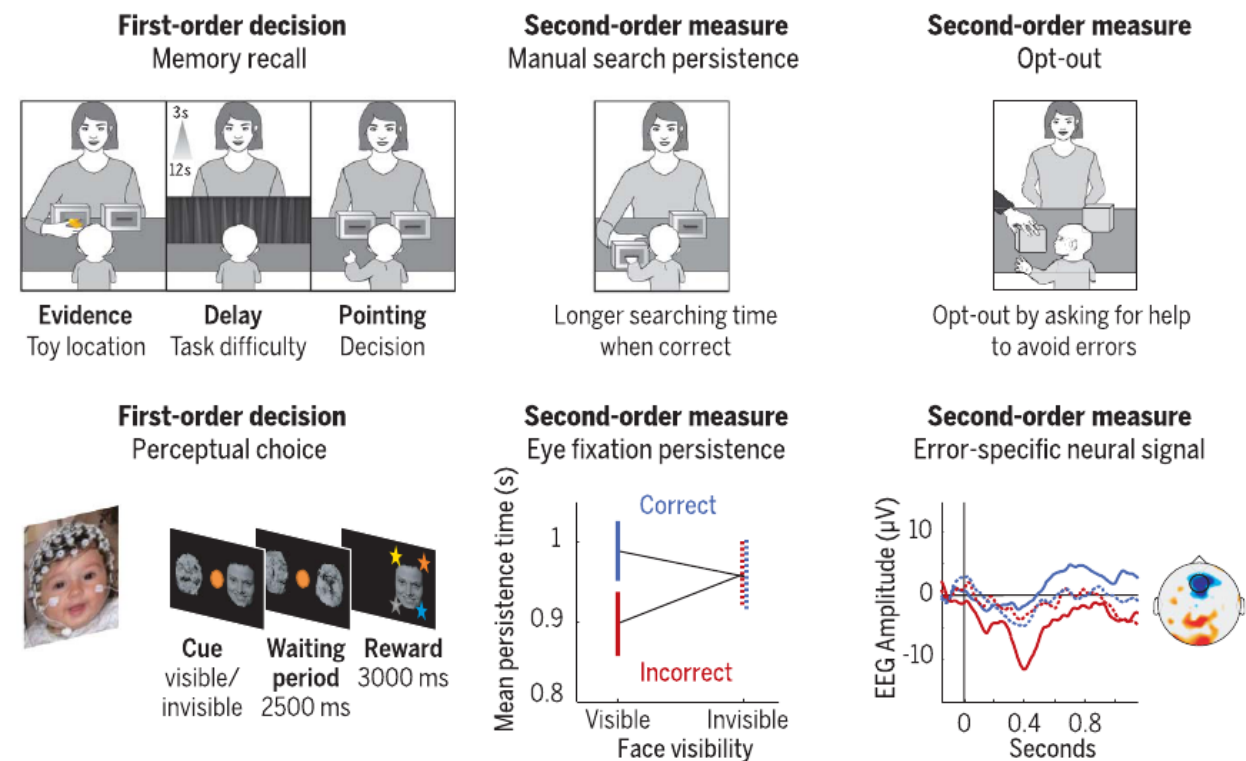
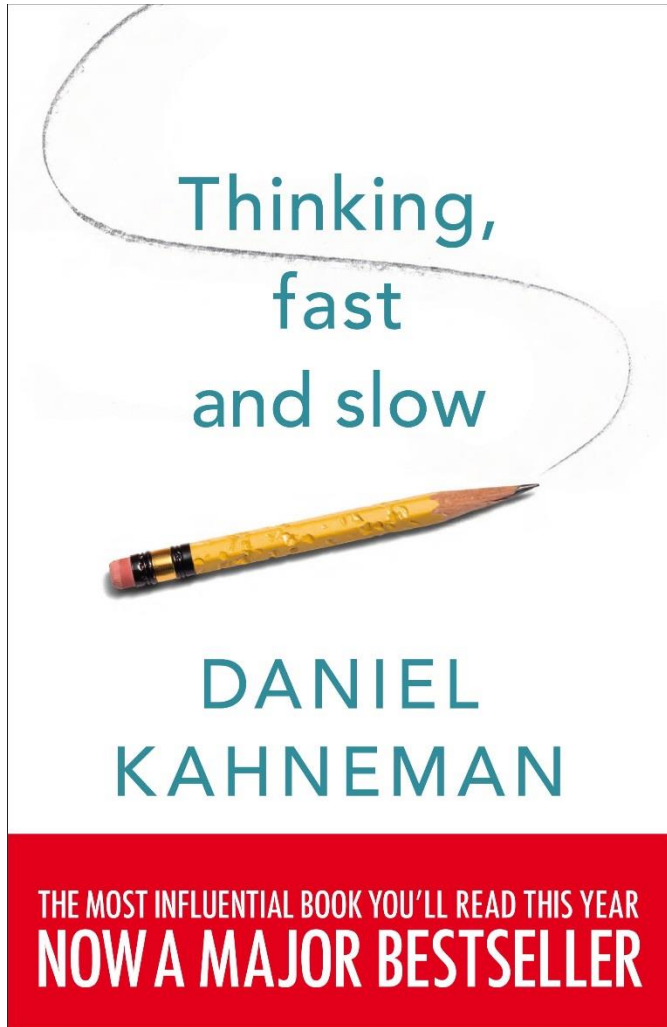


Fig. 3. Self-monitoring: Consciousness in the second sense (C2). Self-monitoring (also called "meta-cognition"), the capacity to reflect on one's own mental state, is available early during infancy.

El tema de la Conciencia

¿y por casa como andamos?



- Somos buenos tomando decisiones rápidas con poca información; o muy malos (según como se mire).
- Hasta ahora somos el único bicho capaz de inteligencia flexible: el que perdió con Alpha Go puede ayudar a su hija con el proyecto de ciencias de la escuela o pintar la verja; Alpha Go no.
- La creación por AI existe pero es tosca.
- ¿Es mejor que el nene haga artístico que medicina?

Saliendo de la exclusión competitiva

- Una salida: el compromiso colonización – competencia: Si mantenemos una AI especialista nosotros podemos ser generalistas.
- ¿Qué hacer? ¿Competir o cooperar?
- Luciano Floridi (Oxford): La IA general es posible pero muy improbable.
- Educación, educación, educación. ¿de qué? La teoría del enciclopedismo local.
- Predecir es difícil, sobre todo el futuro.

Gracias



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