



The AI Revolution: Present and Near Future

Álvaro Soto

Two main messages

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- ① Present: Insights about state-of-the-art in AI

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 - Revolution 1: Memory based machines (2012)

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 - Revolution 2: Reasoning based machines (2020)

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- ② Near Future: Insights about main impacts

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 - A new way to access knowledge

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- ① Present: Insights about state-of-the-art in AI
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- ② Near Future: Insights about main impacts
 - A new way to access knowledge
 - A new way to build machines

Revolution 1

A Memory Based Machine

Deep Learning, 2012

ImageNet Classification with Deep Convolutional Neural Networks

Alex Krizhevsky
University of Toronto
kriz@cs.utoronto.ca

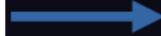
Ilya Sutskever
University of Toronto
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Geoffrey E. Hinton
University of Toronto
hinton@cs.utoronto.ca

An Associative Memory

An Associative Memory

What is an
Associative Memory?



#3FDD5E

This is a
racquet



#1AB67C

Pattern



This is a
racquet

Memory address

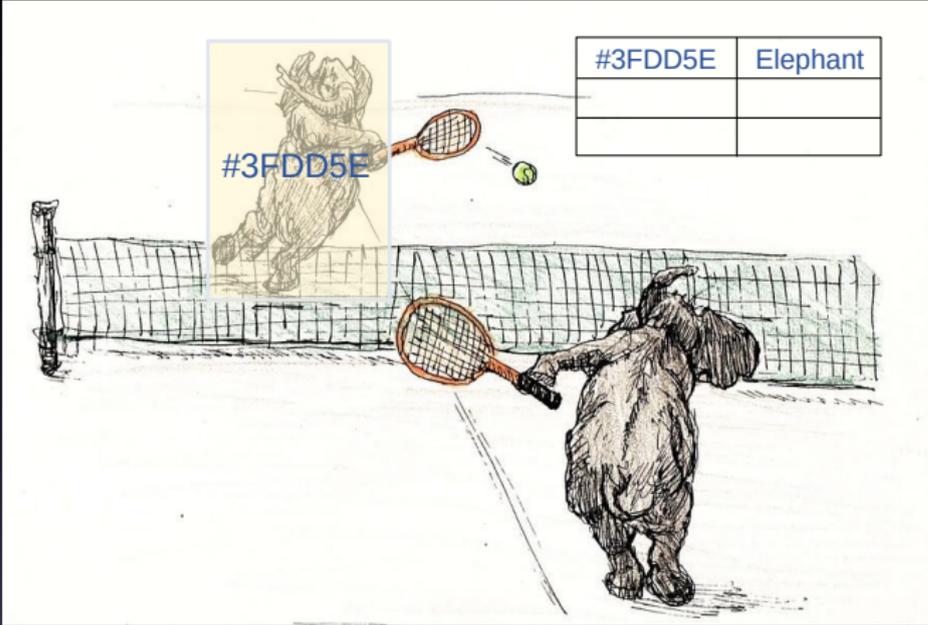
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#1AB67C

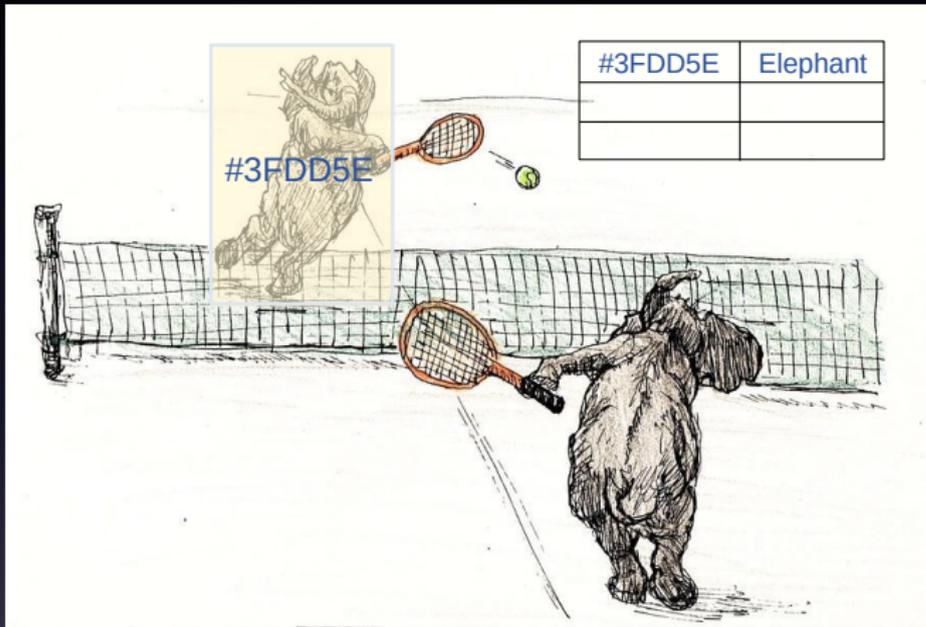
Associate memory

#3FDD5E	elephant
#1AB67C	tennis





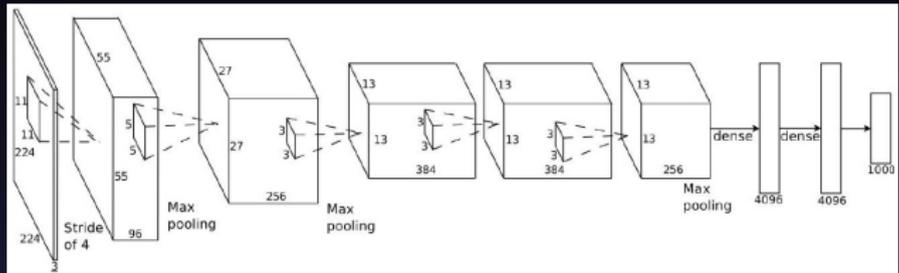
#3FDD5E	Elephant



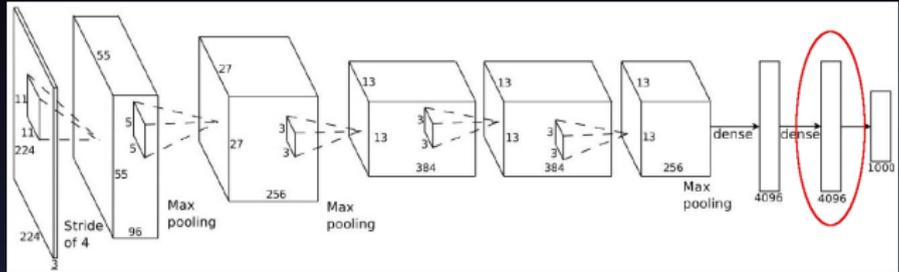
Big Advantage:
No need to search in whole memory

Deep Learning

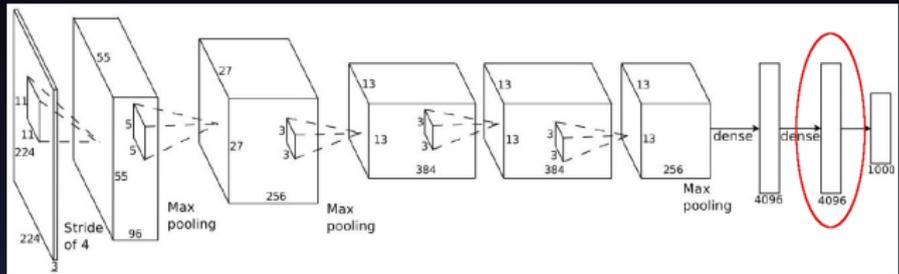
Deep Learning



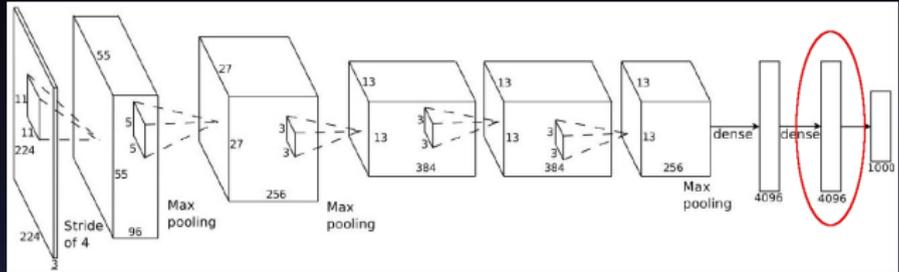
Deep Learning



Deep Learning

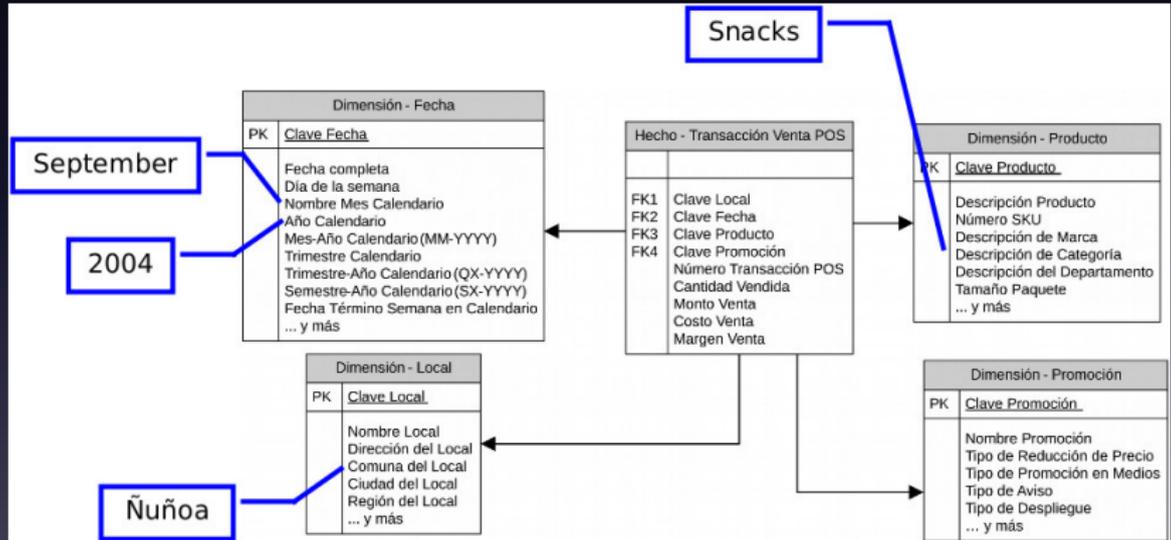


Deep Learning



Why is this so relevant ?

Computer: snacks in Ñuñoa, September 2004?



Computer: What's going on?





Revolution 2

A Reasoning Based Machine

GPT-3, 2020

Language Models are Few-Shot Learners

Tom B. Brown*

Benjamin Mann*

Nick Ryder*

Melanie Subbiah*

Jared Kaplan[†]

Prafulla Dhariwal

Arvind Neelakantan

Pranav Shyam

Girish Sastry

Amanda Askell

Sandhini Agarwal

Ariel Herbert-Voss

Gretchen Krueger

Tom Henighan

Rewon Child

Aditya Ramesh

Daniel M. Ziegler

Jeffrey Wu

Clemens Winter

Christopher Hesse

Mark Chen

Eric Sigler

Mateusz Litwin

Scott Gray

Benjamin Chess

Jack Clark

Christopher Berner

Sam McCandlish

Alec Radford

Ilya Sutskever

Dario Amodei

OpenAI

GPT-3: A Few-Shot Learner

GPT-3: A Few-Shot Learner

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A "Burringo" is a car with very fast acceleration. An example of a sentence that uses the word Burringo is:
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GPT-3: A Few-Shot Learner

A "Burringo" is a car with very fast acceleration. An example of a sentence that uses the word Burringo is:

In our garage we have a Burringo that my father drives to work every day.

T. Brown et al., 2020

Reasoning as an Emergent Property



Reasoning as an Emergent Property



Write a conversation
between the two animals.

Reasoning as an Emergent Property



Write a conversation
between the two animals.

cat: hey dog, can i ride on your back?
dog: sure, why not?
cat: i'm tired of walking in the snow.

Summary: State-of-the-art in AI

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- Powerful pattern recognition abilities through effective associative memories

Summary: State-of-the-art in AI

- Powerful pattern recognition abilities through effective associative memories
- Powerful reasoning abilities (but still unstable) through large scale models.

Part 2: Near Future

New way to access
knowledge

80's



90's - 2000's



Google



New Scenario: from information to knowledge

GPT Models





Gmail

Search in mail

Active



Compose

Inbox 4

Starred

Snoozed

Important

Sent

Drafts

More

Labels

- Clients
- Personal
- Project Clover
- Project Dot
- Project Hedgehog
- Project Rocket
- Project Skyline
- More

<input type="checkbox"/>	<input type="checkbox"/>	Roger Nelson	New comments on MCR draft presentation — Roger Nelson said what abou...	2:35 PM
<input type="checkbox"/>	<input type="checkbox"/>	Lori Cole	Q1 project wrap-up — Here's a list of all the top challenges and findings. Sur...	Nov 11
<input type="checkbox"/>	<input type="checkbox"/>	Lauren Roberts	Fwd: Client resources for Q3 — Ryan, here's the doc with all the client resou...	Nov 8
<input type="checkbox"/>	<input type="checkbox"/>	Ethan Lattimore	Last year's EMEA strategy deck — Sending this out to anyone who missed...	Nov 8
<input type="checkbox"/>	<input type="checkbox"/>	Gloria Hill	Revised organic search numbers — Hi, all—the table below contains the revise...	Nov 7
<input type="checkbox"/>	<input type="checkbox"/>	Shirley Franklin	[Updated invitation] Midwest retail sales check-in — Midwest retail sales che...	Nov 7
<input type="checkbox"/>	<input type="checkbox"/>	Keith Obrien	OOO next week — Hey, just wanted to give you a heads up that I'll be OOO ne...	Nov 7
<input type="checkbox"/>	<input type="checkbox"/>	Lori Cole	Logo redesign ideas — Excellent. Do you have time to meet with Jeroen and...	Nov 7
<input type="checkbox"/>	<input type="checkbox"/>	Madison Wells	Fwd: Feedback on new signup experience — Looping in Annika. The feedback...	Nov 6
<input type="checkbox"/>	<input type="checkbox"/>	Jeffrey Clark	Town hall on the upcoming merger — Everyone, we'll be hosting our second t...	Nov 6
<input type="checkbox"/>	<input type="checkbox"/>	Roger Nelson	Two pics from the conference — Look at the size of that crowd! We're only ha...	Nov 6
<input type="checkbox"/>	<input type="checkbox"/>	Raymond Santos	[UX] Special delivery! This month's research report! — We have some exciting...	Nov 5
<input type="checkbox"/>	<input type="checkbox"/>	Lauren, me 2	Re: Project Skyflight 1-pager — Overall, it looks great! I have a few suggestions...	Nov 5
<input type="checkbox"/>	<input type="checkbox"/>	Lauren Roberts	Re: Corp strategy slides — Awesome, thanks! I'm going to use slides 12-27 in...	Nov 5
<input type="checkbox"/>	<input type="checkbox"/>	Adam Young	Updated expense report template — It's here! Based on your feedback, we've...	Nov 5
<input type="checkbox"/>	<input type="checkbox"/>	Susan Johnson	Referrals from Sydney - need input — Ashley and I are looking into the Sydney ...	Nov 4
<input type="checkbox"/>	<input type="checkbox"/>	Keith Obrien	Direct feedback from another team — Hey Susan! Just wanted to follow up with s...	Nov 4





CENTRO NACIONAL DE INTELIGENCIA ARTIFICIAL



- BioGPT
- 7 Billions parameters
- 80 billions tokens



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Soon:

- AI Cluster in Arica in collaboration with UTA (march 2024)



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- AI Cluster in Arica in collaboration with UTA (march 2024)
- Diplomado in GPT technologies (May 2024)

Part 2: Near Future

New way to build machines



Zippedi: More than 200 robots in Chile,
USA, Germany, and Australia.

Summary:
A HUGE technological revolution

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- A new scenario to access knowledge and to build machines

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A HUGE technological revolution

- A new scenario to access knowledge and to build machines
- A new cognitive tool: human-machine partnership will be key to boost productivity and business value



Thanks!