

The AI Revolution will not be Monopolized

Ines Montani
Explosion AI

spaCy

Open-source library for
industrial-strength Natural
Language Processing in Python

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Company and digital
studio, bootstrapped
with consulting

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First commercial product:
radically efficient data collection
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Extension platform with a SaaS
layer to help users scale up
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Data Store

Coming soon: pre-trained,
customisable models for a variety
of languages and domains

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Google will win the AI race: analyst

By **Julia Limitone** | Published July 11, 2018 | **Technology** | FOXBusiness

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Google leads in the race to dominate artificial intelligence

Tech giants are investing billions in a transformative technology



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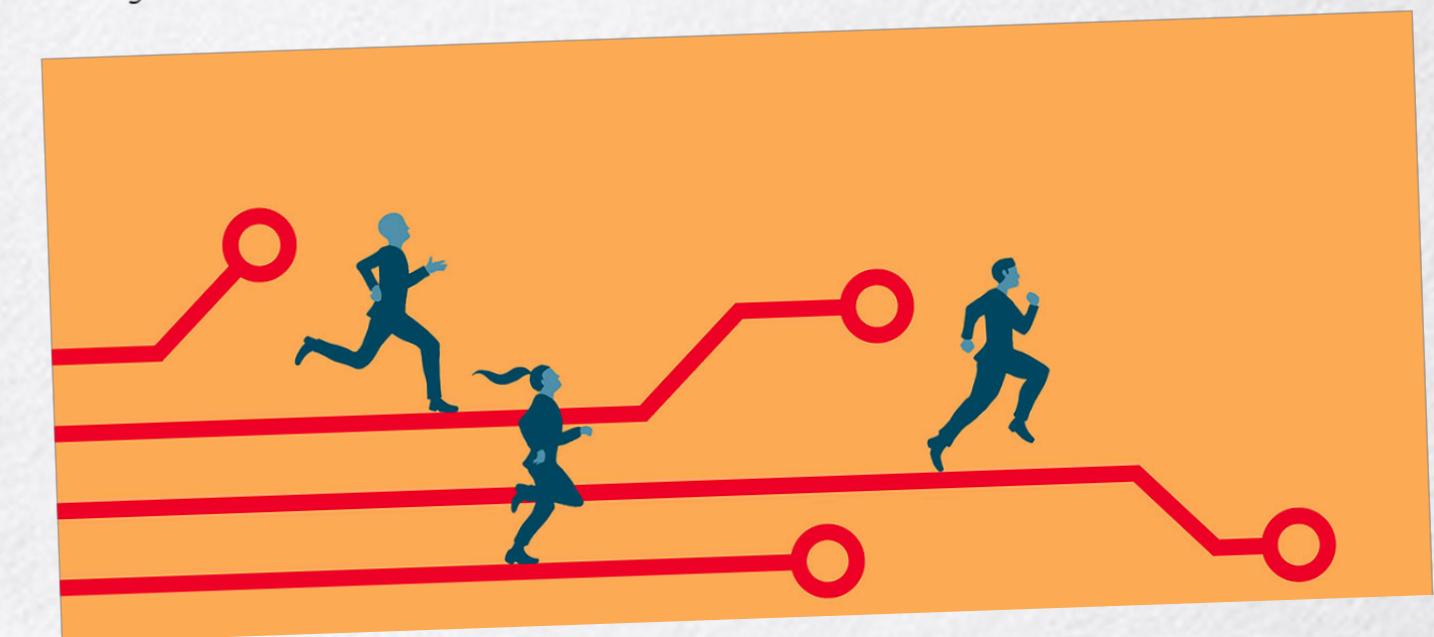
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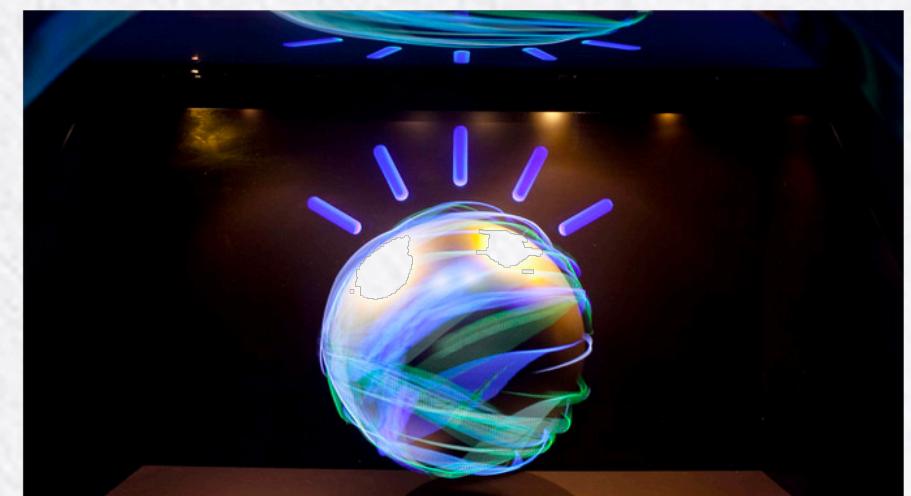
Harvard Business Review

ORGANIZATIONAL CULTURE

The 5 Things IBM Needs to Do to Win at AI

by Evangelos Simoudis and Brad Power

FEBRUARY 03, 2016



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Which Country Is Winning the AI Race—the U.S. or China?

Two experts debate one of the hottest topics in technology, and one with profound implications for both countries

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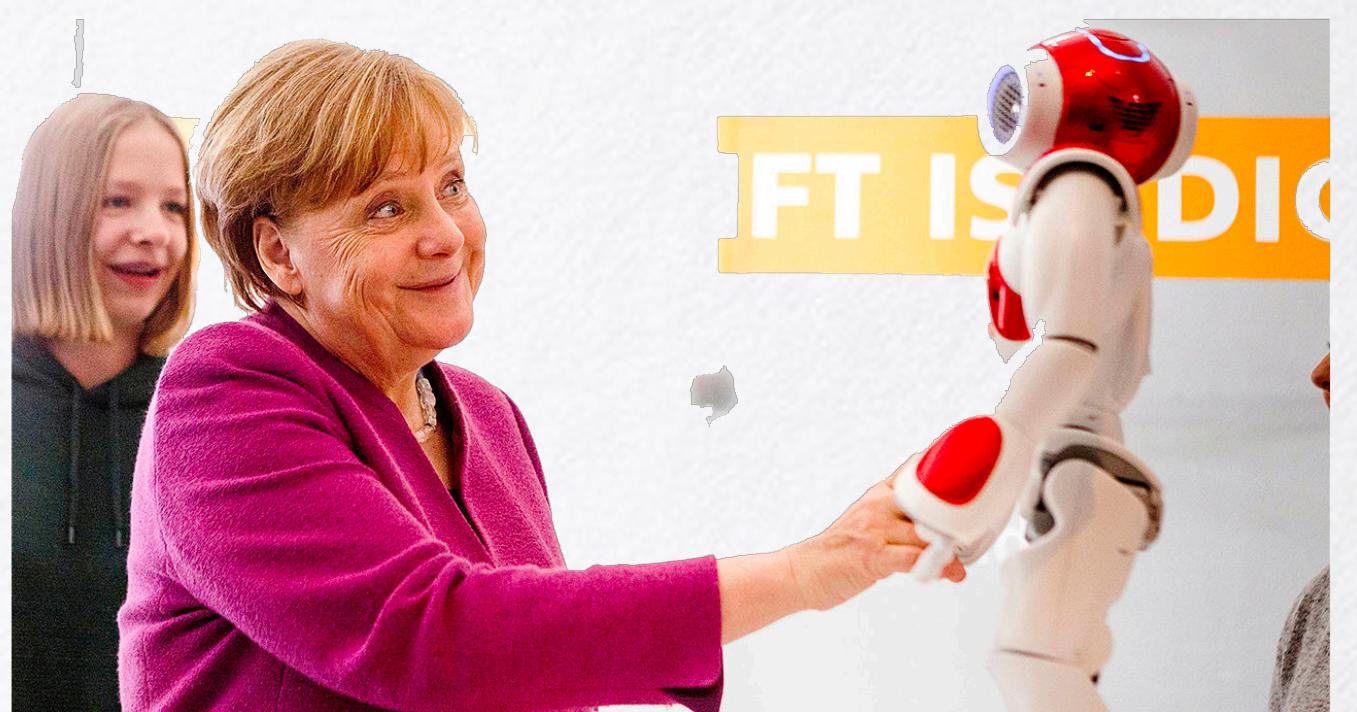
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Big data, small politics

Can the EU become another AI superpower?

Taking on America and China will be hard



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Why China will win the global race for complete AI dominance

Kai-Fu Lee – a former Apple, Microsoft and Google executive turned investor – is placing big bets on machine learning. And China is leading the way

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Four ways Canada can own the artificial intelligence century

Much of the foundational research into artificial intelligence originated in Canada, but we'll have to work to stay a leader in the field

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In global AI race, Europe pins hopes on ethics

Boosting consumer trust in European AI applications will help Continent catch up with competitors, Brussels believes.

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THE VERGE

China and the US are battling to become the world's first AI superpower

By James Vincent | @jjvincent | Aug 3, 2017, 10:30am EDT

Illustrations by James Bareham



The concept of an “AI race”
is hopelessly confused.



Implications of an “AI race”

- o races are **competitive**
- o races have **winners** and **losers**
- o races have a **start** and an **end**

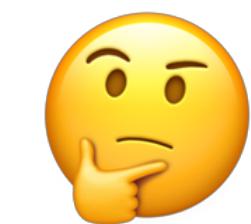


What do we mean by AI?



What do we mean by AI?

- o Specific consumer **products**?



What do we mean by AI?

- o Specific consumer **products**?
- o “Artificial General Intelligence”?



What do we mean by AI?

- o Specific consumer **products**?
- o “Artificial General Intelligence”?
- o A technocratic dictatorship?



What do we mean by AI?

- o Specific consumer **products**?
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- o A robot **army**?



What do we mean by AI?

- o Specific consumer **products**?
- o “Artificial General Intelligence”?
- o A technocratic dictatorship?
- o A robot **army**?
- o Machine Learning **research**?

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Monopolizing a new product category?

Bloomberg

Who's Winning the Self-Driving Car Race?

A scorecard breaking down everyone from Alphabet's Waymo to Zoox.

Forbes

Amazon Is Humiliating Google & Apple In The AI Wars



Monopolizing a new product category?

- Lots of **new products** will use machine learning
- Many will be **monopolized**. By who? Fair question!
- If **different companies** make all these products, who “won” at AI?

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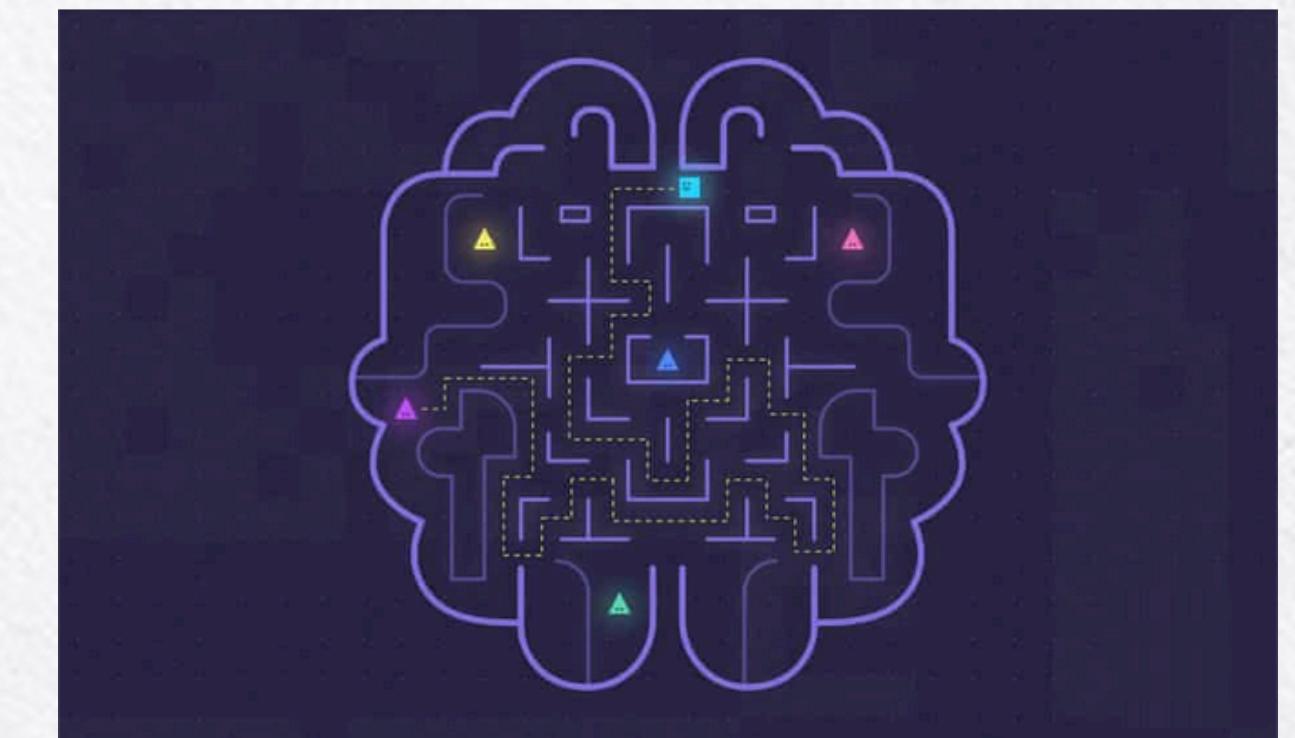
Being the first to develop “Artificial General Intelligence”?



Can Blockchain Ensure Artificial General Intelligence Develops to Benefit Humanity?

AGI doesn't exist yet, but fictional depictions of intelligent machines eradicating or enslaving humanity abound. One startup is hoping it can use blockchain to develop AGI in a more utopian direction.

The
Guardian



Science

Google's DeepMind makes AI program that can learn like a human

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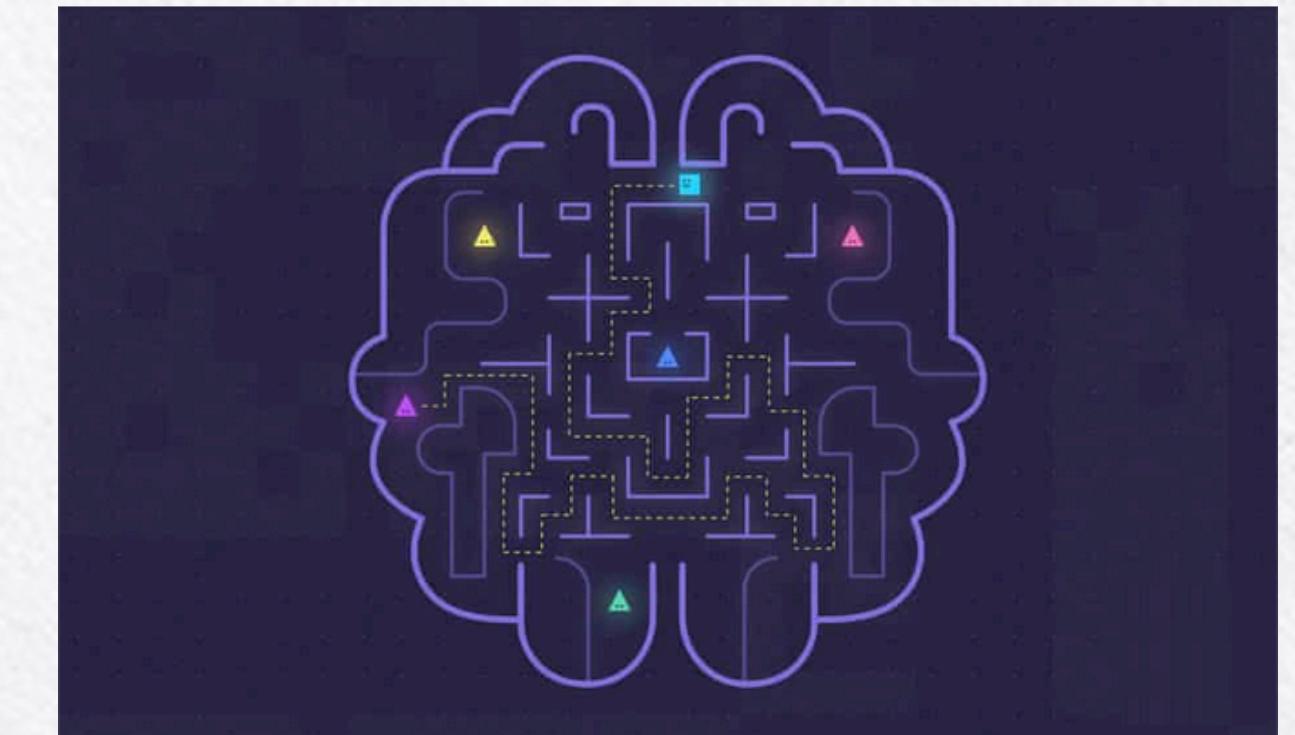
- Very hard to extrapolate from here to proper AGI
- If someone develops AGI, will it even matter who?



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Whatever you believe about AGI...

- “**AGI is science fiction**”
Okay, so there’s nothing to win
- “**AGI is an existential threat**”
Okay, so *nobody* will win
- “**AGI will solve all our problems**”
Okay, so everybody wins?

Using new technology to oppress people?

EXPLOSION



Putin: Leader in Artificial Intelligence Will Rule World

Russian President Vladimir Putin says that whoever reaches a breakthrough in developing artificial intelligence will come to dominate the world.

China will win the A.I. race, according to Credit Suisse



- China will be number one in artificial intelligence due to the country's lack of "serious law" about data protection, said Dong Tao, vice chairman for Greater China at Credit Suisse Private Banking Asia Pacific.

Using new technology to oppress people?

- Oppression is a **risk** we should talk about in AI
- But hardly a race we want to win!



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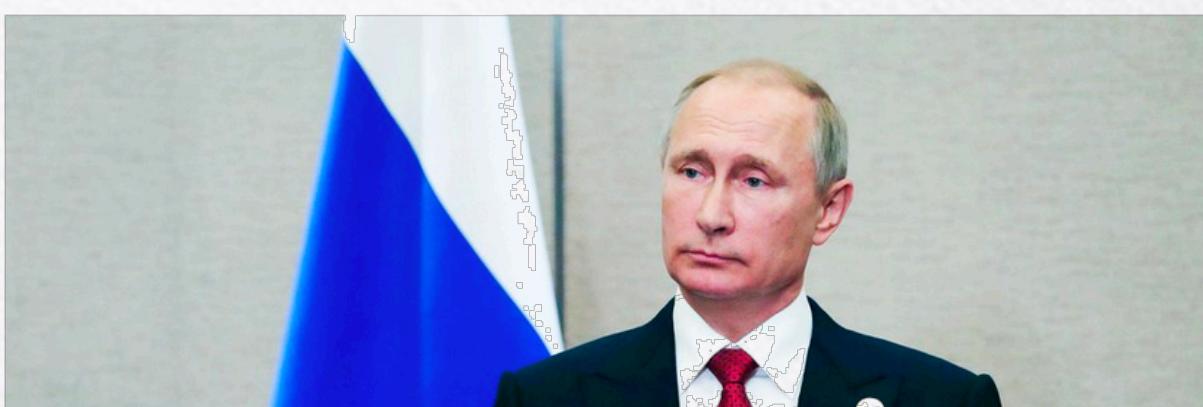
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Winning a *literal* arms race?

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FOR SUPERPOWERS,
ARTIFICIAL
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FUELS NEW GLOBAL
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THE VERGE

The Pentagon is getting serious about AI weapons

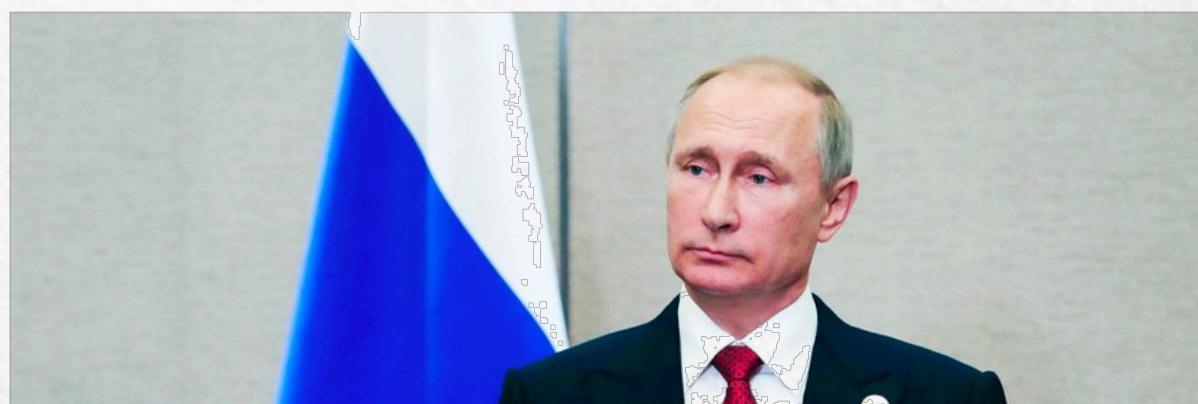
'We must see to it that we cannot be surprised,' says the Pentagon's top scientist

Winning a *literal* arms race?

- Government research will **follow**, not lead
- If everyone **publishes openly**, nobody will pull far ahead

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Publishing the most machine learning research?

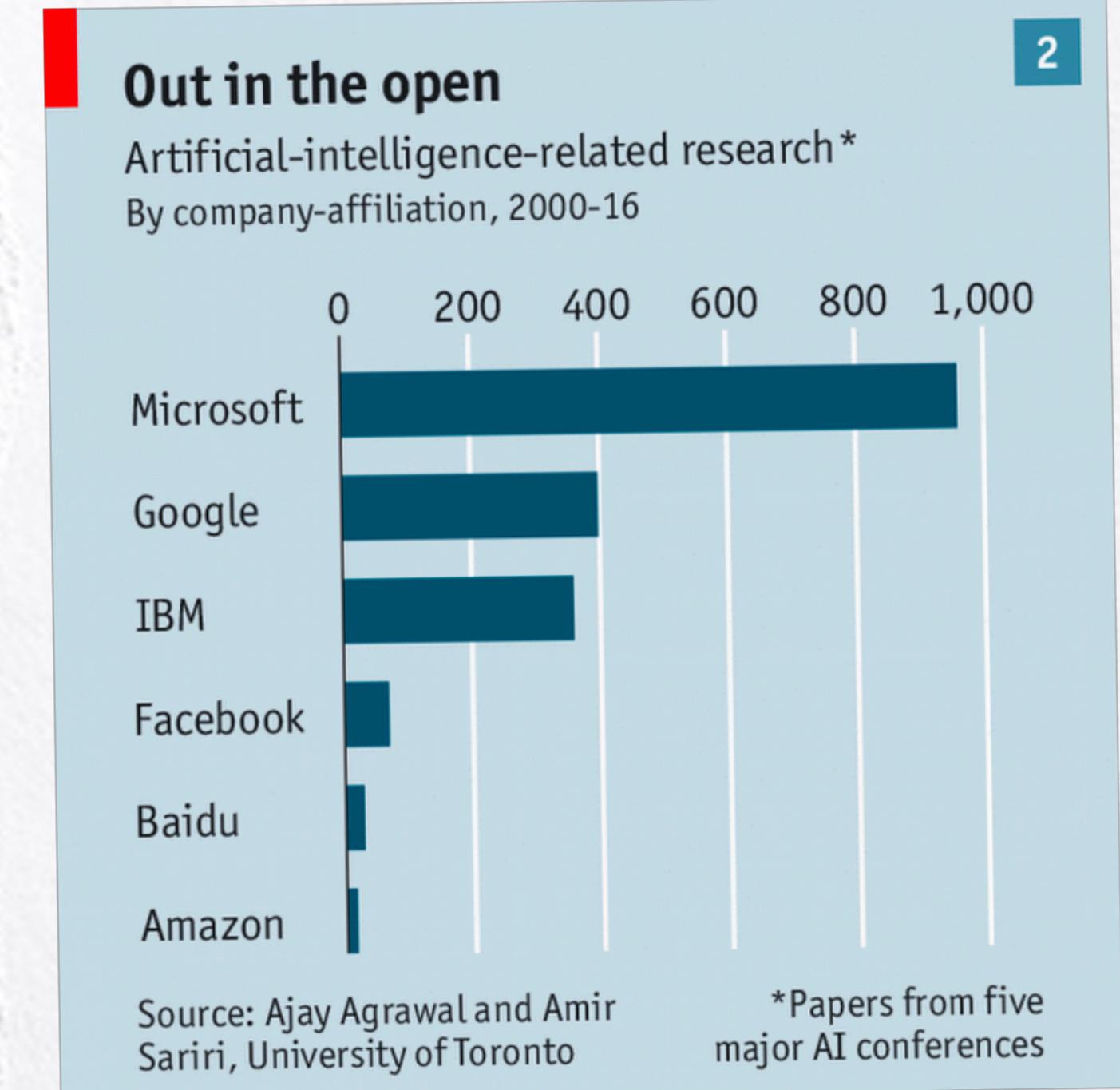
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Four ways Canada can own the artificial intelligence century

Much of the **foundational research** into artificial intelligence originated in Canada, but we'll have to work to stay a leader in the field



Publishing the most machine learning research?

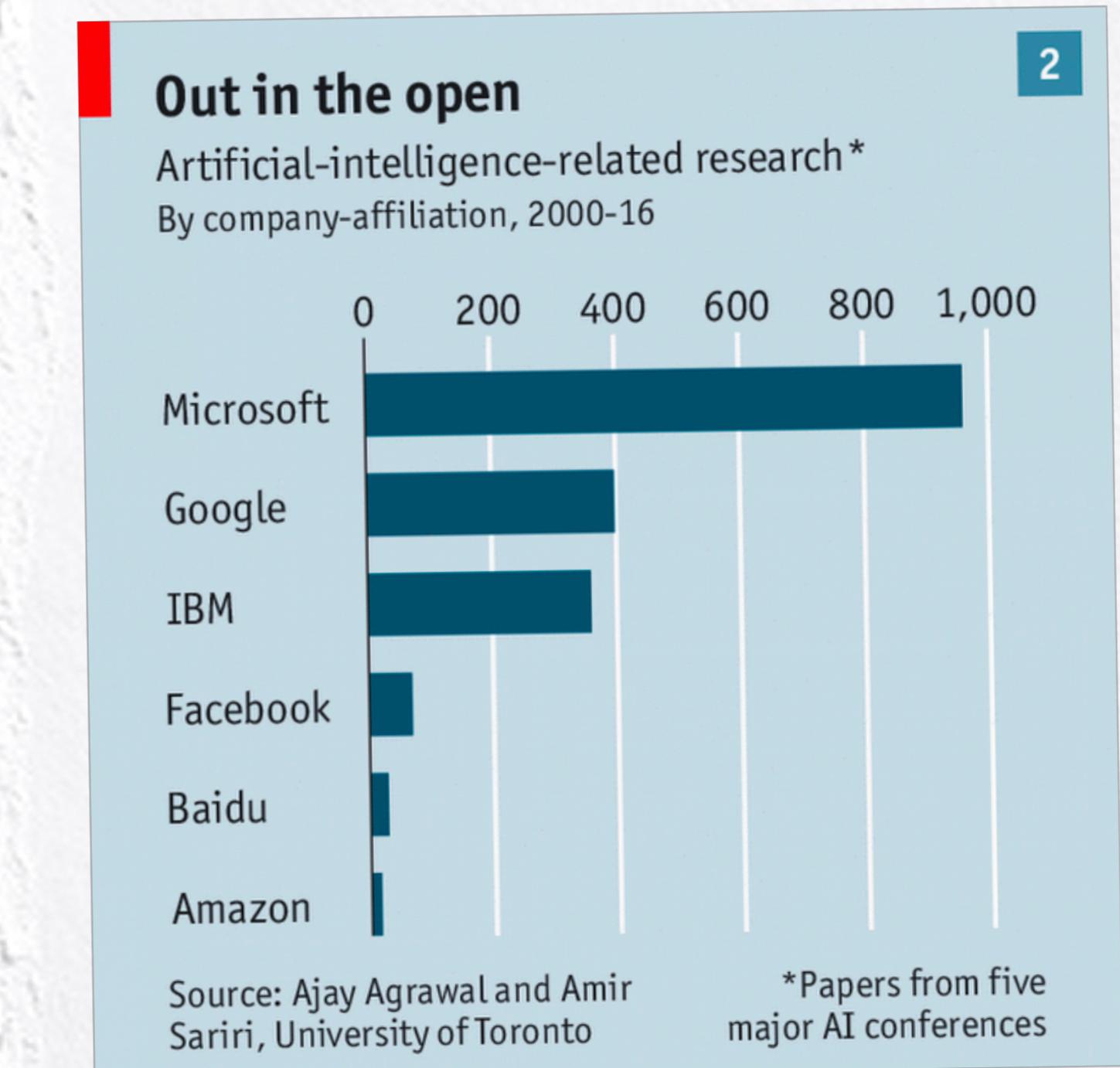
- Open research is **collaborative**, not competitive
- If research is **published**, everyone wins

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Why don't companies
like Google keep their
research secret?



Reasons companies publish

- **Attract talent.** You can't get the best researchers if you don't let them publish
- **Inevitability.** Trying to lock down the secrets wouldn't work anyway
- **Leverage.** A higher “AI waterline” is good for their business

Nobody “dominates” machine learning research

#	Company / Institution	Total Papers	%
1	Google	60	8.8
2	Carnegie Mellon University	48	7.1
3	Mass. Institute of Technology	43	6.3
4	Microsoft	40	5.9
5	Stanford University	39	5.7
6	University of CA, Berkeley	35	5.2
7	Deepmind	31	4.6
8	University of Oxford	22	3.2
9	University of Illinois	20	2.9
10	Georgia Institute of Technology	18	2.7

Source: [NIPS Accepted Papers Stats by Robbie Allen \(Medium\)](#)

FINANCIAL TIMES

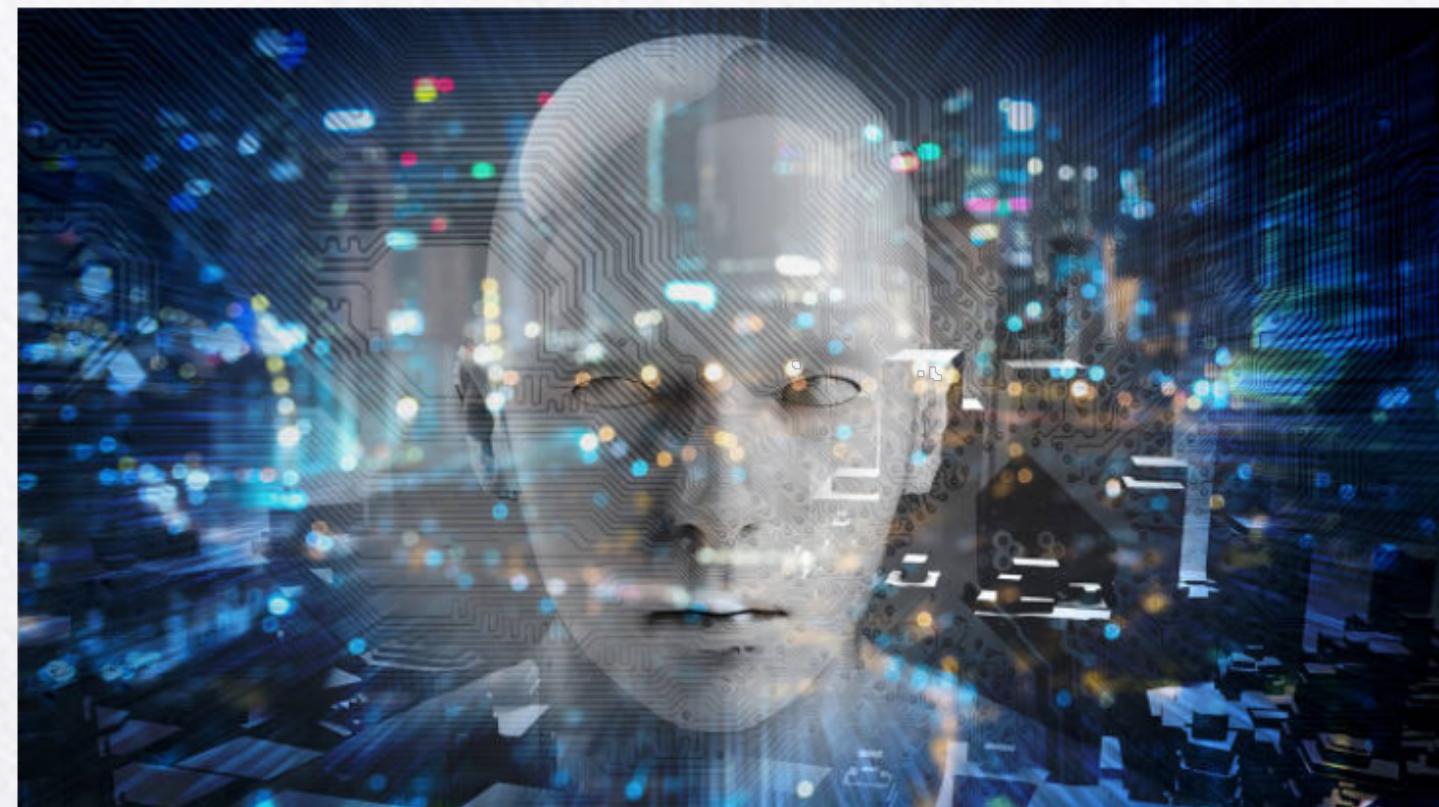
NOV

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US-China trade dispute

US considers export controls on AI and other new tech

Restrictions applied to weaponry could be extended as trade war with China intensifies





But what about the data?

- **Reusing data is like reusing code.** If it doesn't do what you want, it's not very useful.
- **Personal data** matters when it's about *you personally*.
- **General knowledge** is easy to acquire. It doesn't need unique proprietary datasets.



Data alone won't grant anyone a monopoly

- o Data has **diminishing returns**
- o Making your dataset $10\times$ bigger doesn't make it $10\times$ better
- o It's just not *that* expensive! What datasets cost more than a manufacturing plant?

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We won't all be buying
“AI” from the AI Store.



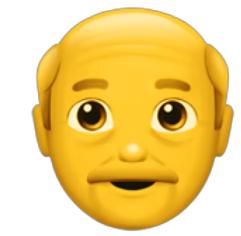
Companies are in-housing

- o Machine learning is **software development**, it needs to evolve with the project
- o Nobody has a monopoly on AI expertise, people are **learning quickly**
- o **Owning and controlling** the data is crucial for many applications



Vendors can provide products, not magic

- o The challenge is taking what's theoretically possible and **applying it to a problem**
- o What matters is making the right decisions for the **larger application**



Buyers aren't old and stupid

- o Tech illiterate management stereotype is outdated
- o Most companies let developers **choose their tools**
- o Developers strongly prefer **open technologies**: more flexible, better career growth

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Rich open-source ecosystem

	Library	GitHub URL	GitHub Stars
 TensorFlow	TensorFlow	tensorflow/tensorflow	115k 
 scikit-learn	scikit-learn	scikit-learn/scikit-learn	32k 
 PyTorch	PyTorch	pytorch/pytorch	21k 
 XGBoost	XGBoost	dmlc/xgboost	14k 
 spaCy	spaCy	explosion/spacy	11k 
 Gensim	Gensim	RaRe-Technologies/gensim	8k 
 NLTK	NLTK	nltk/nltk	7k 

Source: GitHub (November 2018)

So, who's going to
win at AI then?

✊ The AI revolution will not be monopolized

- o There's no single “AI race” – **lots of people** are building **lots of things**
- o There's **no magic solution** waiting to be discovered
- o Nothing about machine learning suggests a monopoly or a winner-takes-all market

Thanks!

 **Explosion AI**
explosion.ai



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