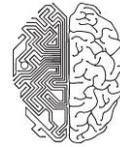


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OECD Technology Foresight Forum
AI Economical and Social Implications

November 17th, 2016
Paris

Destructive creation or creative destruction?

Schumpeterian wave or ...?

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AI vs. Humans?



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Improvements and **convergence in ML and neurosciences**

+ Big Data + Super Computing = **new age of AI**

Intelligent 'agents'— humans, machines or **hybrids**
[AUGMENTED INTELLIGENCE]—ability to learn, adapt and deploy successfully in dynamic and uncertain environments

AI is always relative to human intelligence

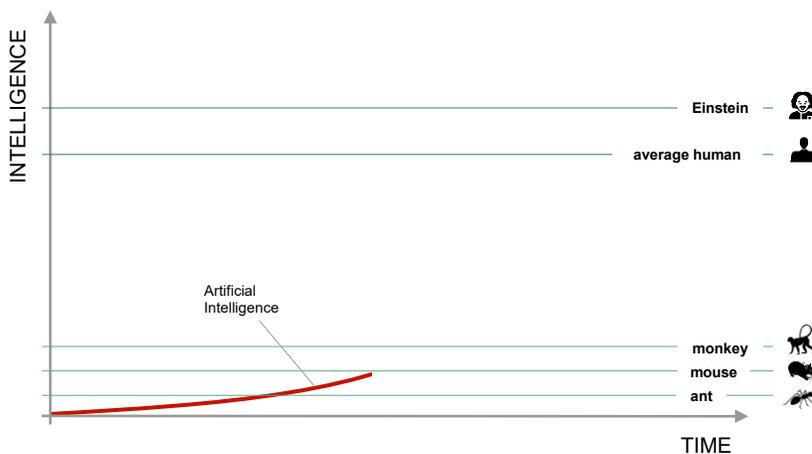
AI vs. Robotic?

(Narrow, Weak AI vs. Strong, AGI)

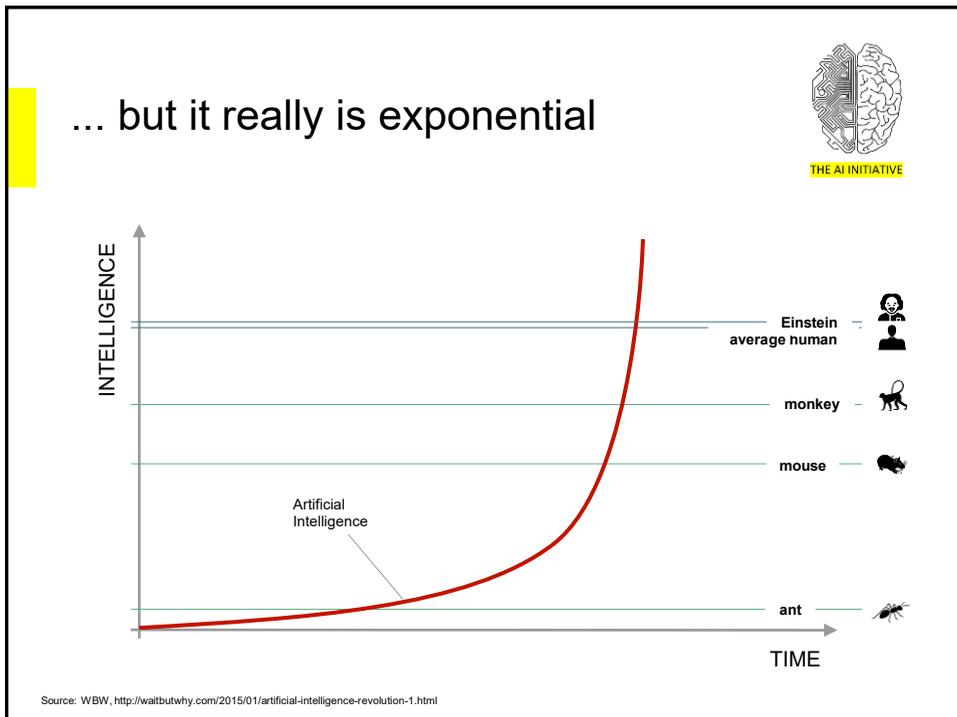
AI progress *seems* linear...



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Source: WBW, <http://waitbutwhy.com/2015/01/artificial-intelligence-revolution-1.html>



What's at stake?
The potential risks of advanced Artificial Intelligence

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EMPLOYMENT: Automation could make ~50% of all jobs redundant

SOCIAL WELFARE: Rampant (and increasing) inequality & social unrest

PRIVACY, AGENCY and DIGNITY might be severely limited

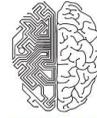
SECURITY of our nations, with systems pierced by criminals and adversaries

HUMANITY: Ultimately, AI could pose a risk to the survival of humanity

A global AI race

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Private sector & Governments

A race dynamic is shaping up within sectors, companies and at a geopolitical level

Winner takes all + 1st mover advantage paradigms

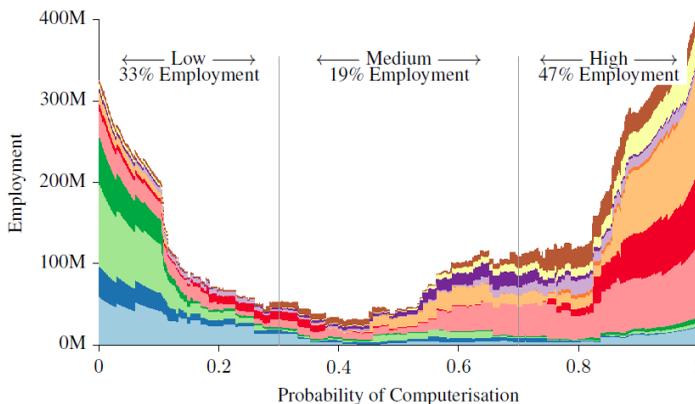
Emergence of AGI

Is a real probability we cannot afford to ignore

- Management, Business, and Financial
- Computer, Engineering, and Science
- Education, Legal, Community Service, Arts, and Media
- Healthcare Practitioners and Technical
- Service
- Sales and Related
- Office and Administrative Support
- Farming, Fishing, and Forestry
- Construction and Extraction
- Installation, Maintenance, and Repair
- Production
- Transportation and Material Moving



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47% //
Keynes 1933 ?

Source: Carl Benedikt Frey and Michael A. Osborne, Oxford 2013

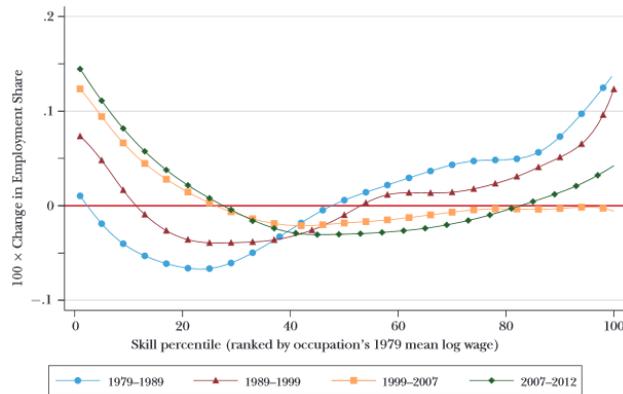
Rise of populism linked to AI?

Beyond AI/Robotics traditional perceptions



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Smoothed Employment Changes by Occupational Skill Percentile, 1979–2012*



Middle Class shifts: jobs that require between a low and high amount of skill have been disappearing
=> both middle and high-skill jobs being replaced with low-skill jobs

*Source: David H. Autor, MIT 2015

Possible Public Policies

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2 main avenues for Policy Makers to engage in:

1) Revolution in education and training: continuing education

Rational: high-skill jobs => highly-skilled work force => more education

How human labor can complement new technology?

Deploy accelerated professional transitions: education DOES NOT STOP @ 21!

2) Redistribution mechanisms: AI winners concentrated in few private sectors firms

How to readjust?

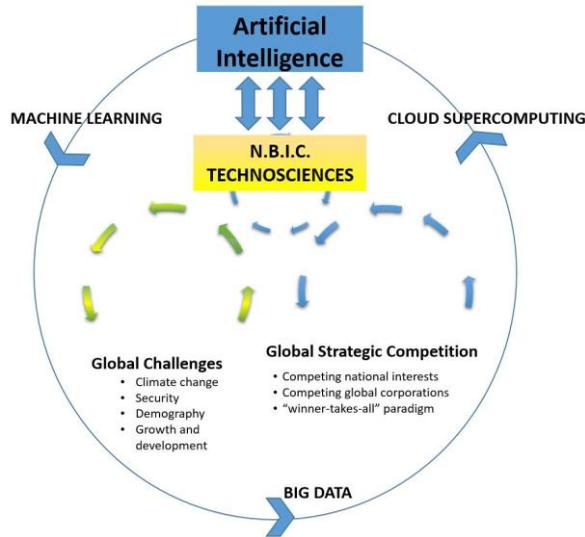
Universal income is not a cookie cutter approach => money and time are not substitutable vectors of socialization

=> A global responses calls for a global dialog

Recommendation

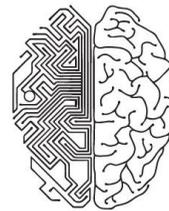
A **global coordination** is a necessity

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More Info: <http://iop.harvard.edu/forum/preparing-future-artificial-intelligence>

Definitions



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Improvements and **convergence in ML and neurosciences**
 + Big Data + Super Computing = **new age of AI**

Artificial intelligence* is an entity able to receive inputs from the environment, interpret and learn from such inputs, and exhibit flexible behaviors and actions that help the entity achieve a particular goal

* Based on: <http://techemergence.com/what-is-artificial-intelligence/>

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The rise of machine learning

The construction and optimization of algorithms that can learn from, and make predictions about, massive quantities of data.

The revolution of Deep Learning

DeepMind & Alpha Go: we are entering into a new age of ML after the "AI Winters" of the 70's and 90's.

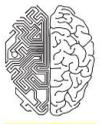
Branch of ML which tries to model the way the human brain processes light and sound into vision and hearing; deep learning allows computational models that are composed of multiple processing layers to learn representations of data with multiple levels of abstraction.

Sectors / Upsides

- Transportation**
Self driving cars, GPS,
UAS and space exploration...
- Healthcare**
Diagnosis, detections, care givers,
Blindness vision, portability...
- Domotics**
- Defense and security**
- Customer services**
- Personal Assistants**
- Telecom**
- Logistics**

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- Smart Cities**
- Delivery drones**
- Finance**
HFT, fraud detection...
- Service Robots**
- Customer services**
Chat bots, spam filter, predictive AI..
- Personal Assistants**
Search engines, OCR
- ...

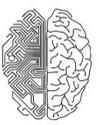


Prof. Ed Felten
Deputy Chief Technology Officer
White House Office of Science and
Technology Policy (OSTP)

See: <http://iop.harvard.edu/forum/preparing-future-artificial-intelligence>

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***“We are nowhere near
the point of broadly
regulating AI ... but
the challenge is how to
ensure AI remains
safe, controllable, and
predictable as it gets
smarter.”***