OECD Technology Foresight Forum
AI Economical and Social Implications

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Paris

Destructive creation or creative destruction?
Schumpeterian wave or …?
AI vs. Humans?

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)

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**AI progress *seems* linear...**

![Graph showing the progression of intelligence over time, comparing average human, Einstein, and various animal species to artificial intelligence progress.](http://waitbutwhy.com/2015/01/artificial-intelligence-revolution-1.html)
... but it really is exponential

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

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

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

**PRIVACY, AGENCY and DIGNITY** might be severly 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

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

47% // Keynes 1933?

Source: Carl Benedikt Frey and Michael A. Osborne, Oxford 2013
Rise of populism linked to AI?
Beyond AI/Robotics traditional perceptions

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

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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Definitions

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/

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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**THE FUTURE SOCIETY**

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

“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.”