

Toward a Controlled, Useful and Demystified Artificial Intelligence



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The recent rise of artificial intelligence technologies represents **a major shift that is deeply transforming our societies and economies**. Nevertheless, artificial intelligence remains a subject to constraints of social acceptability, because of **alarmist visions**.

The concept of artificial intelligence refers to **multiple technologies**, which rely on the **use of algorithms** and were **born in the second half of the 20th century**.

These technologies, whose combinations are constantly evolving, are already being **implemented in a wide range of sectors** and have led to **unprecedented opportunities to revolutionize our living environment and improve our lives** especially in matter of care for people.

Progress in artificial intelligence raises questions that the society must be aware of: What are the **opportunities and risks** that are emerging? Are France and Europe well positioned in the world race that has started? What **respective places for public research and private research**? What kind of cooperation between the two sectors? What are the **priorities for investment** in artificial intelligence research? What **ethical, legal and policy principles** should guide the new technologies? Should regulation take place at national, EU, or international level?

In order to help answer these questions, the Parliamentary Office for scientific and technological assessment (OPECST) unanimously adopted a report entitled **"Toward a Controlled, Useful and Demystified Artificial Intelligence"** on 14 March 2017.

The **international surge of artificial intelligence** with significant attention in the mainstream media and among the general public was little over two years ago, in January 2015, when 700 researchers and entrepreneurs signed an open letter *"Research Priorities for Robust and Beneficial Artificial Intelligence"*. The purpose of the document was to **warn about the potential dangers of AI**.

It is striking that there was **no scientific basis or serious argument** to support this first warning about the **alleged risk of malicious misuse and dangers of AI**.

Yet, even without justification or proof, this alert has **reinforced the fears and the irrational anxieties** facing the **deployment of artificial intelligence technologies**.

Following the publication of the letter, initiatives in the area of artificial intelligence have grown at an unprecedented pace throughout the year 2016. After the introduction of artificial intelligence in the public debate in 2015, the year 2016 and the first quarter of 2017 have been marked by **numerous events and reports**. While progress is exponential and increasingly based on private funding with considerable resources, it is **essential to rationally assess and highlight the opportunities as well as the risks** of artificial intelligence, to reassure the public and demystify the biased representations of AI.

These unwarranted representations, which can be totally opposed, are accentuated by the general phase of progress in which we are situated: indeed, the recent period can be seen as the "spring of artificial intelligence". This is a period of polarized opinions, both **excessive anxieties**, as well as **excessive hopes**: the cycles of hopes and disappointments that mark the history of artificial intelligence invite us to be cautious and to demonstrate realistic expectations of these technologies.

Developments in this field can be rapid and the current or future sectorial applications are of considerable scope including **education, environment, energy, transport, aeronautics, agriculture, trade, finance, defense, security, communications, recreation, health, dependency, disability** and countless others.

The report "**Toward a Controlled, Useful, and Demystified Artificial Intelligence**" provides comprehensive research on what is called "artificial intelligence" and **reviews many recent reports** published on the subject in France and worldwide.

The report also presents the **ethical, legal, economic, social and scientific challenges of these technologies**. Some of the topics discussed include: the dominant role of private research, led by American and potentially Chinese companies; accelerating the transition to a dominated globalized economy by "platforms" (like Google,

Facebook or Amazon...); labor market transformations; liability regimes; biases and problems of data and algorithms; the phenomenon of "black boxes" of algorithms and the question of "information bubbles" or "filter bubbles". The report also addresses issues of inquiry related to "singularity", "NBIC convergence" and "transhumanism", as well as the **increasing need to take into account ethical rules**.

Advances in artificial intelligence are first and foremost **beneficial**. However, it can't be denied that they **also involve risks**. But these risks can and must be **anticipated, identified, and mitigated**.

The advent of **super-intelligence** is not part of these risks in the short to medium term. In the long run, **the reality of this threat is uncertain**. As for its imminence in the short or medium term, prophesied by several media figures, it is just a **fantasy**.

This report is intended as a first contribution to the indispensable task of identifying, anticipating and mitigating real risks.

This work of demystification must be **collective, interdisciplinary and international**. In order to prevent future disillusionment, it is necessary to ensure **continuous monitoring of these technologies and their uses**.

Artificial intelligence represents an opportunity for our societies and economies; it is **neither a vain quest nor a plan to replace man by machine**. **France must rise to this challenge**.

It is, therefore, necessary to **go beyond appearances** and to look at the **scientific reality** behind the hopes and anxieties expressed by the development of artificial intelligence.

Public debate cannot be engaged rationally in ignorance of technologies, scientific methods, and principles of artificial intelligence.

The report advocates **controlled, useful** and **demystified** artificial intelligence.

Controlled, because these technologies will have to be **the safest, most transparent and fairest possible**.

Useful because while they must **respect humanistic values**, they ultimately have to **benefit the general public**.

Finally, **demystified**, because the difficulties of social acceptability of artificial intelligence largely result from the **unfounded**

alarmist visions and the lack of understanding.

Rather than a **hypothetical confrontation in the future between men and machines**, which is dystopian science fiction, the report is convinced of the **beautiful future of man-machine complementarity**.

We are moving towards an **augmented human intelligence** rather than an **artificial intelligence competing with man**.

French start-ups in AI and robotics

Agents

Personal
Jam, snips, Wiidii

Professional
Birdly, Julie Desk, Utiol, ottspott

Platforms / Tools
clustaar, Havi, Bot, Smartly.ai

Robotics (Hardware + Software)

Robocortex, IMMERSIVE ROBOTICS, IR, BLUE, AXYN, ALDEBARAN, STAR, EVENT BOOTS, nqi, HODMANG, STIMULACTIV, MWOO, OCTOPUS ROBOTS, GORBO, Partnering ROBOTICS

Enterprise

Security / Fraud
QOSMOS, Shift Technology, CybelAngel, TRUST, Cypres, Aflarise

Marketing / Sales
tmyclues, CustomerMetrix, BEYABLE, GEOMAIL, xpr, mediego, tastehit

Customer support
gorgias, SENDERS, CallDesk, viavoo, PoYou DreamUp, dictaNOVA

Business + Predictive Intelligence
PredicSis, ZELROS, clustaar, antidot, IDMOG, DATA PRED

HR
Custoo, riminder

Platforms

Hardware / Processing
KALRAY, LightOn, SCORTEX

Big Data / Machine Learning
data iku, SINEQUA, tellmeplus, antidot, craft.ai, ekenSa, DATA PRED, Invenis

Natural Language
syllabs, proxem, yseop

Vision / Image
Smartmeup, deep.matic, heuritech, ANGUS.V

Audio
niland, ava, OtoSense

Industries

AdTech
DataBerries, adomik

Insurance
Shift Technology, alan, Quark

Legal
Doctrine.fr

Manufacturing / Logistics
BALYO, VEKIA, SCORTEX

Transportation
vulog, Autokab, karos

City + Infrastructures
plume, OtoSense, placemeter, DCtron

Healthcare / Pharma
Cardiologs, HONESTICA, Khresterion, BIOSEMIETY, MENSIA, DREAM, Quark, implicity, PIXYL, DEXSTR, Qynapse

Retail
ALKEMICS, vertesgo, Moodstocks, Neosensys, madd.ie, tmyclues, deep.matic, placemeter, AntVoice, Occi, tastehit, Search xpr

Source : ISAI/Paul Strachman

THE RECOMMENDATIONS OF THE REPORT

I. Controlled artificial intelligence

Proposal n° 1: Avoid excessive legal constraints on artificial intelligence research. If a legal framework regulating AI is adopted, it should be **European, or even international**, rather than national.

Proposal n° 2: Encourage **safe, transparent and fair algorithms and robots**, while providing a **charter of artificial intelligence and robotics**.

Proposal n° 3: Train students in **ethics of artificial intelligence and robotics** within specialized courses in higher education.

Proposal n° 4: The public debate on the ethical principles guiding these technologies should be led by a **national institute for artificial intelligence and robotic ethics**.

Proposal n° 5: Assist labour market transformations resulting from artificial intelligence and robotics by pursuing **ambitious education and lifelong learning policies** aimed at **adapting improvement and requalification of skills**.

II. Useful artificial intelligence, at the service of humans and humanist values

Proposal n° 6: Restore the importance of **basic research** and reassert the place of **public research** in relation to private research, while encouraging their **cooperation**.

Proposal n° 7: Encourage the creation of **European champions** in artificial intelligence and robotics.

Proposal n° 8: Focus investments in artificial intelligence research towards **discoveries bringing social benefits**.

Proposal n° 9: Expand the curriculum of **artificial intelligence technologies** in higher education and create – in France – at least one **international and interdisciplinary center of excellence** in artificial intelligence and robotics.

Proposal n° 10: Structure and mobilize the **French community** in artificial intelligence by **organizing national level competitions** and awards aimed at promoting AI research, for instance regarding treatment of **labeled national data bases**.

Proposal n° 11: Promote diversity and women in field of artificial intelligence research.

III. Demystify artificial intelligence

Proposal n° 12: Organizing **computer training in primary and secondary education** specifically **highlighting artificial intelligence and robotics**.

Proposal n° 13: Raise public awareness of artificial intelligence through "**PR and public service campaigns**", **international exhibitions** promoting artificial intelligence and robotics, and the **broadcasting of educational television programs**.

Proposal n° 14: Increase public awareness of the **practical consequences** of artificial intelligence and robotization.

Proposal n° 15: Be **vigilant about the extravagant and alarmist uses** of the concept of artificial intelligence and robotics.

To view the report:

www.senat.fr/opecst
www.assemblee-nationale.fr/commissions/opecst-index.asp

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