

Machine learning: the power and promise of computers that learn by example

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*The impact on society of machine learning:
an opportunity or a threat?*

Foundation for Science and Technology
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The Royal Society's machine learning project

expertise and
engagement

Digital interactions:

60,000

Face-to-face encounters:

15,000

Wider contributions:

1,500

Practitioner participation:

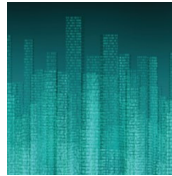
500

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five areas for action

Data



Skills



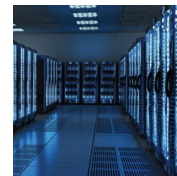
Business



Society



Research



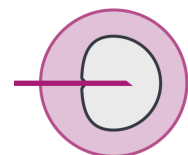
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Government Chief Scientific Advisor's report 2014

Innovation:
managing risk, not
avoiding it

Questions people ask

- Who benefits, and who carries the risks?
- Who pays? Is it fair?
- What are the other options and pathways?
- What values are at stake?
- Who is in control?
- What might be the unanticipated consequences?
- Who or what can I trust?



.... With context-specific answers

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Machine learning and society

participants' initial orientations

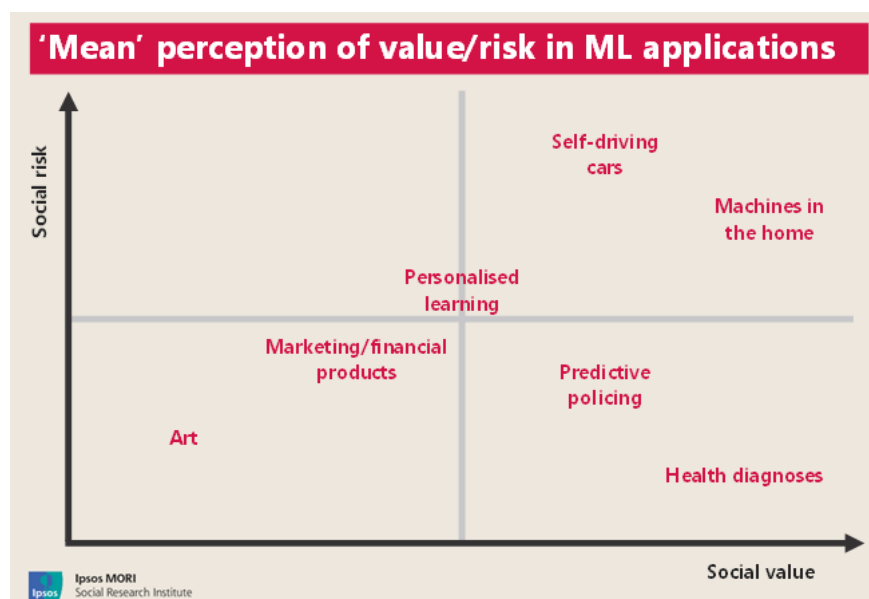
- “I can personally relate to this technology because I can see where this could have an impact on my life whether good or bad”
- “This is an important emerging technology and it carries potential risks and benefits to society”
- “I’m suspicious about the purpose of this technology”
- “I can’t see how this would work – humans are too unique for machines to really understand us”

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Work by Ipsos Mori for the Royal Society report on Machine Learning: the Power and Promise of Computers that Learn by Example

Machine learning and society

context is key in public views of machine learning

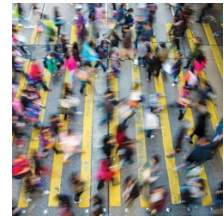


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Machine learning and society

report
recommendations

- Governance surrounding the use of data requires a new framework to keep pace with the challenges in the 21st century.
- It is not appropriate to set up governance structures for machine learning per se. Specific questions about the use of machine learning in specific circumstances should be handled in a sector-specific way.



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Royal Society report on Machine Learning: the Power and Promise of Computers that Learn by Example

Data management and use

disconnected
debates



Data management and use: Governance in the 21st century

A joint report by the British
Academy and the Royal Society

BRITISH
ACADEMY
for the humanities and social sciences

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Governance in the 21st century

report
recommendations

A new guiding principle:
**promote human
flourishing**



With a stewardship body to:

- Ensure delivery of critical functions
- Catalyse and act

Expert, deliberative,
anticipatory

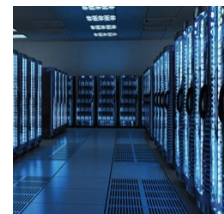
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British Academy and Royal Society report: Data management and use: Governance in the 21st century

Machine learning

a new wave of
research

- Interpretability
- Verification and validation
- Privacy
- Dealing with real-world data
- Causality
- Human-machine interaction
- Security



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Royal Society report on Machine Learning: the Power and Promise of Computers that Learn by Example

END