OECD Global Parliamentary Network

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OECD WORK ON ARTIFICIAL INTELLIGENCE

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BETTER POLICIES FOR BETTER LIVES

OECD's Work on AI

Past

- Technology Foresight Forum on AI (Nov 2016)
- Event "AI: Intelligent Machines, Smart Policies" (Oct 2017)
  Key findings:
  - AI transforming economic & social sectors **deeper & faster** than expected
  - AI is moving fast, so should governments
- Digital Economy Outlook 2017 (emerging technologies)

Ongoing

1. Analytical report on "AI in Society" (forthcoming)
2. OECD Policy Observatory on "AI in Society"
3. Scoping Principles to Foster Trust in and Adoption of AI, in view of OECD Council Recommendation on AI?

1. Analytical Report: AI in Society

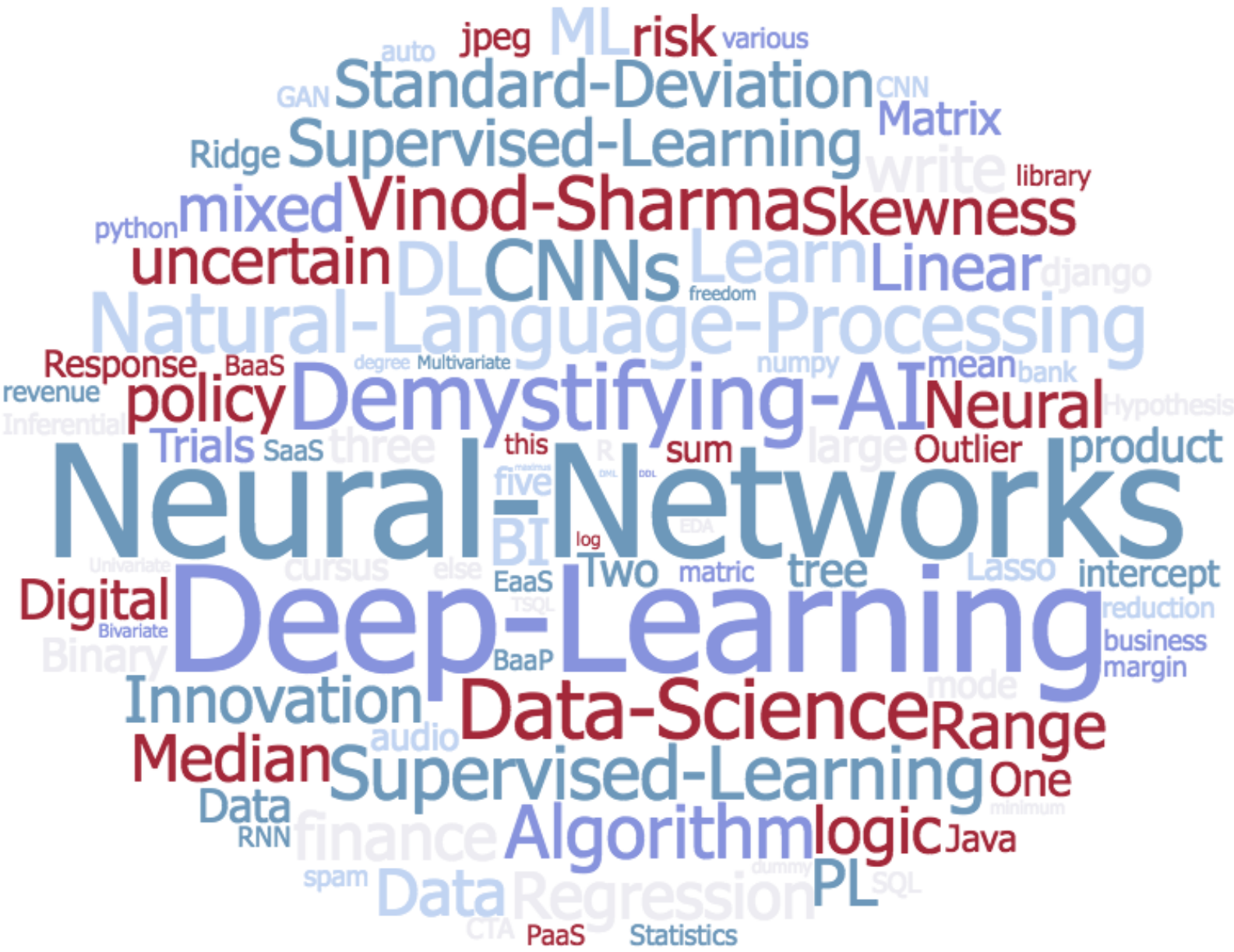
(1) Purpose

- Help shared understanding of AI in the present and near-term.
- Map economic & social impacts of AI applications & policy issues.
- Help coordination & consistency with discussions in other fora.

(2) Structure

1. AI technical landscape
2. Measuring trends in AI development and diffusion
3. AI economic landscape
4. Public policy considerations
5. AI policy landscape

what is artificial intelligence?



Definitions vary but AI can be understood as…

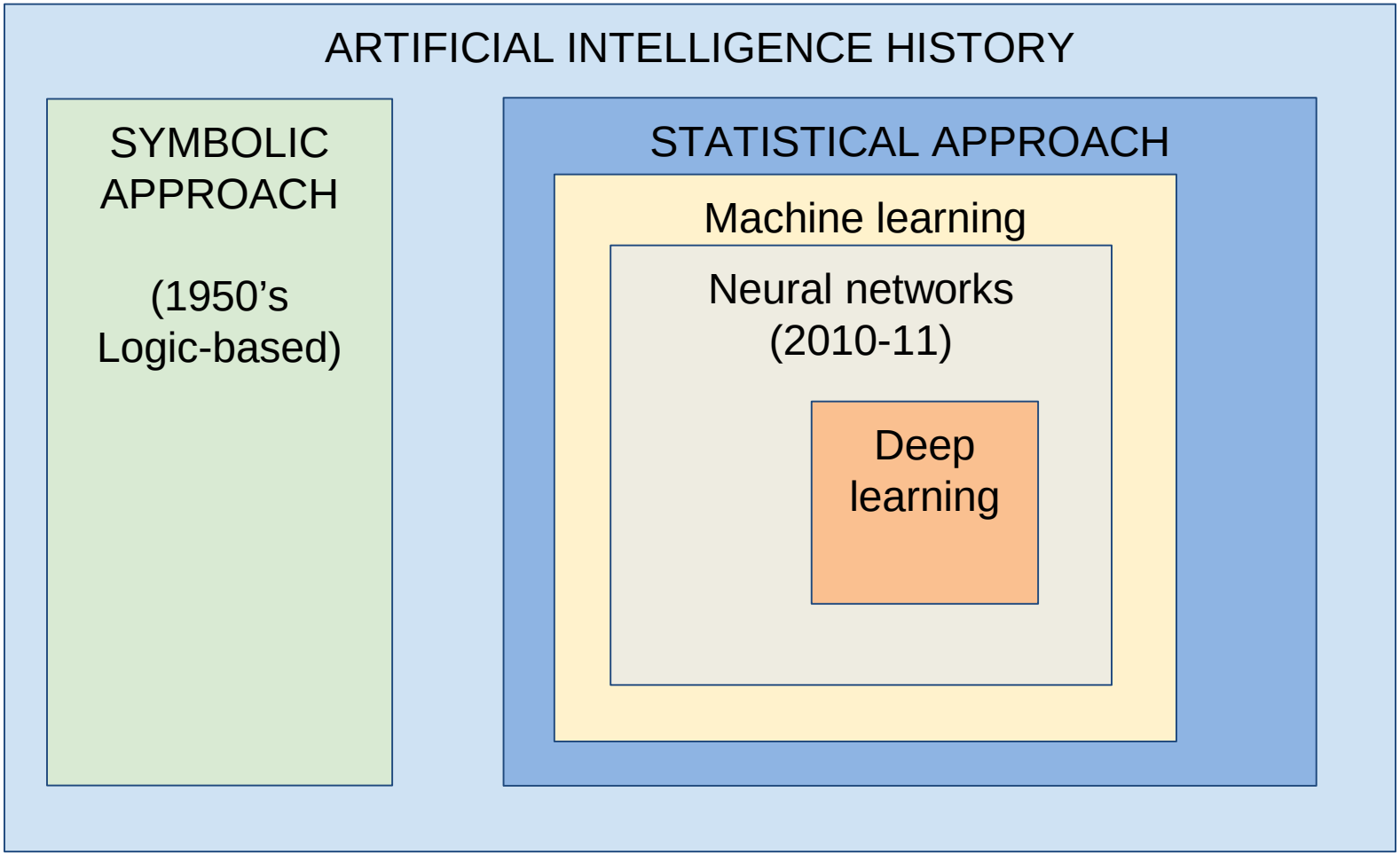
… equipping systems with **cognitive functions that allow them to function appropriately and with foresight in their environment**.

can require that systems perceive, learn from and adapt to dynamic environments.

Examples of AI:

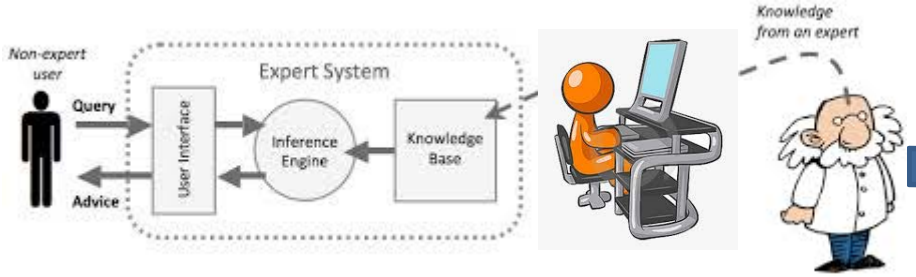
systems interpreting human speech,
competing in strategic game systems,
driving cars autonomously or
interpreting complex data.

the evolution of AI since 1956

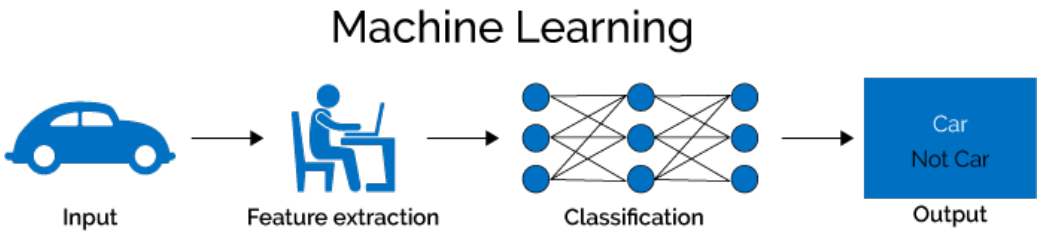


the evolution of AI

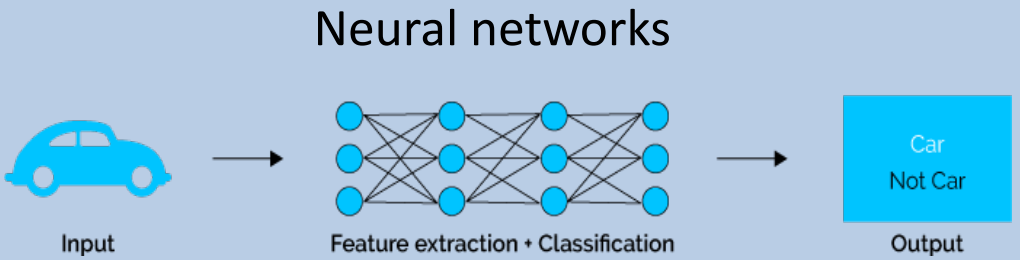
SYMBOLIC APPROACH
(logic-based, 1950s)



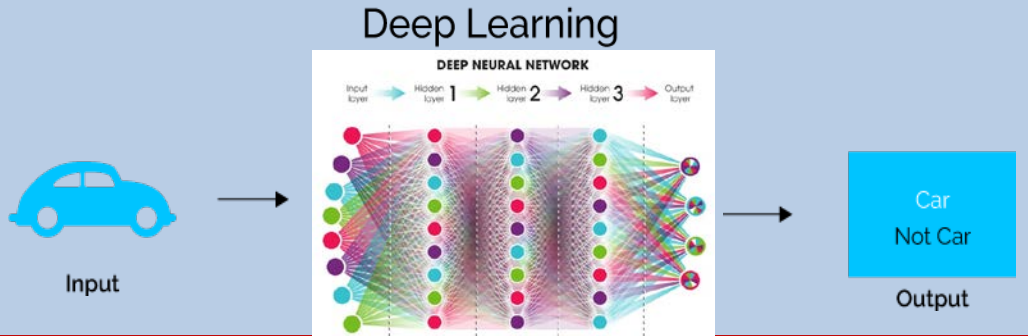
MACHINE LEARNING



NEURAL NETWORKS
From 2011

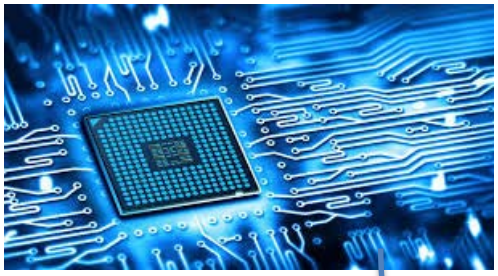


DEEP LEARNING



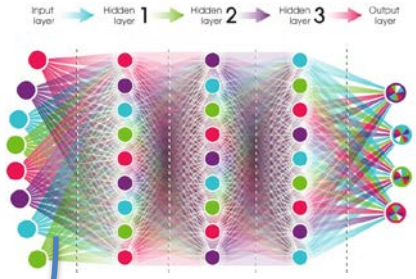
neural networks over past 6-7 years

computing power



big data

neural networks



Explosion in AI development

Algorithms for

- Learning,
- Reasoning,
- Perception,
- Interaction … etc.

Neural networks = brain-inspired systems designed to replicate the way humans learn by modifying their own code to find and optimise links between inputs and outputs in situations where the relationship between cause and effect is complex or unclear.

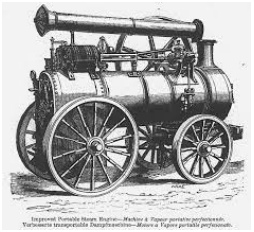
Deep learning = particularly large neural networks; there is no defined threshold as to when a neural net becomes “deep”.

AI economic impact

AI algorithms detect patterns in enormous volumes of data: improving accuracy and efficiency of <u>predictions</u> and lowering their cost.

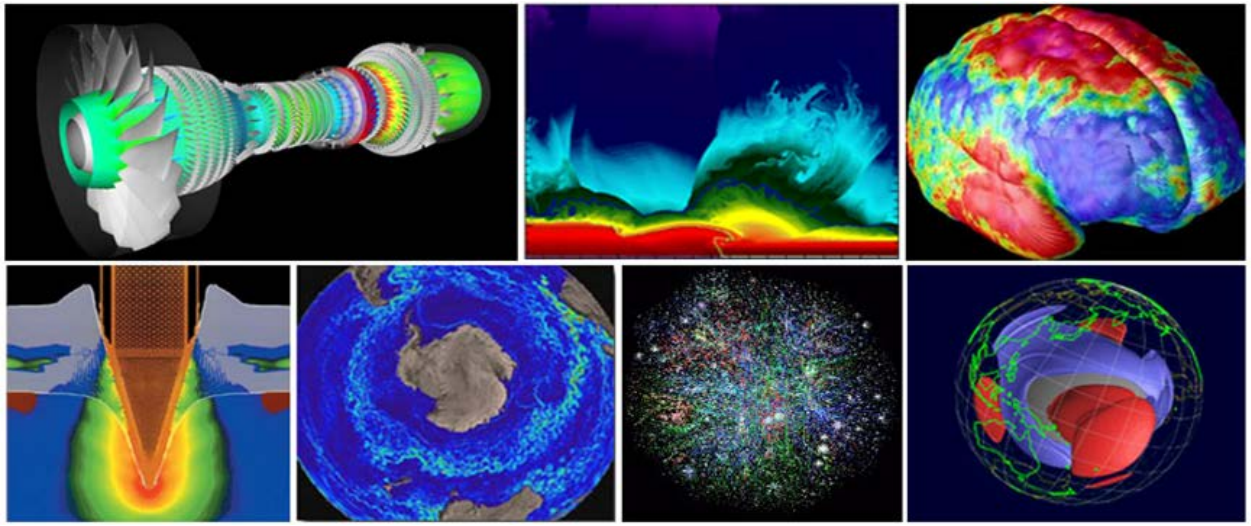
- productivity gains
- lower costs
- safety etc.
- Help address complex challenges

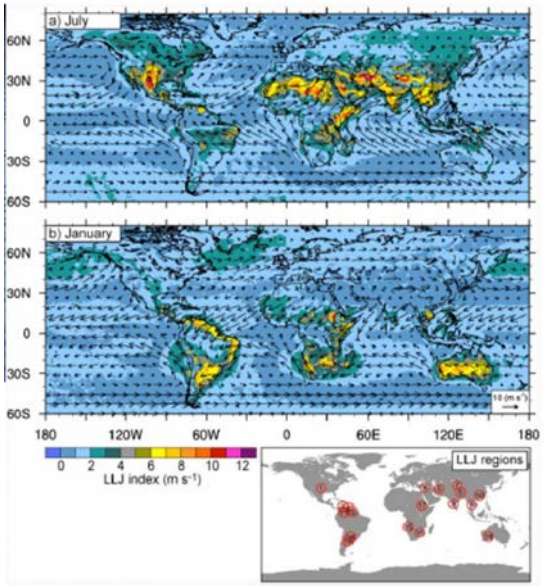
A new General Purpose Technology?



(applications) for example AI in science

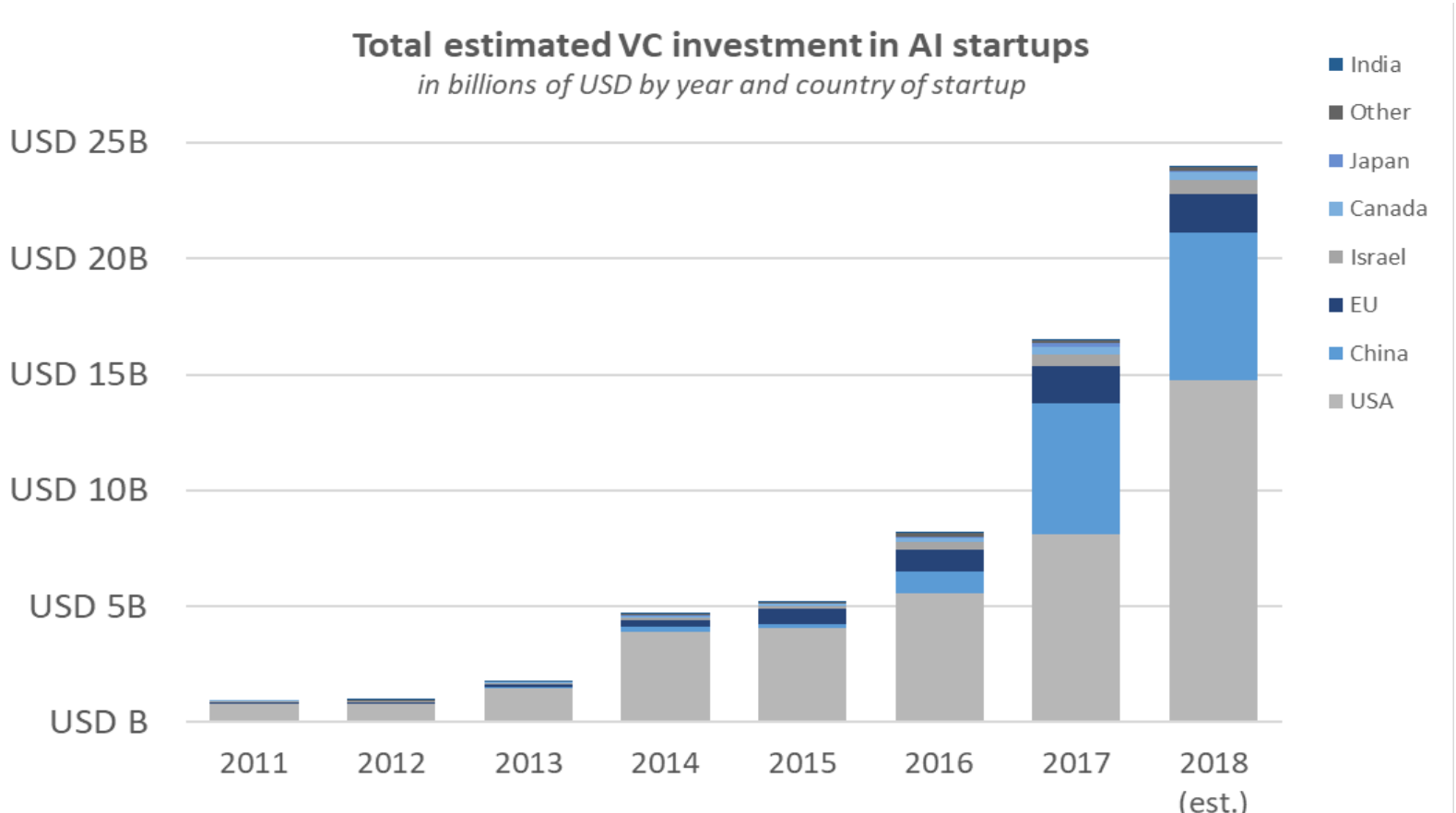
AI algorithms curate data and analyse data sets and scientific literature that exceed human comprehension, when traditional models cannot account for complex interacting factors.





(trends) private equity investment in AI start-ups

- Investment in AI start-ups nearly doubled in 2017, to reach USD 15 billion and projected USD 24 billion in 2018.
- Most private equity dollars are invested in the US, China, EU led by the UK, Israel, Canada, Japan.



Key policy Issues for AI

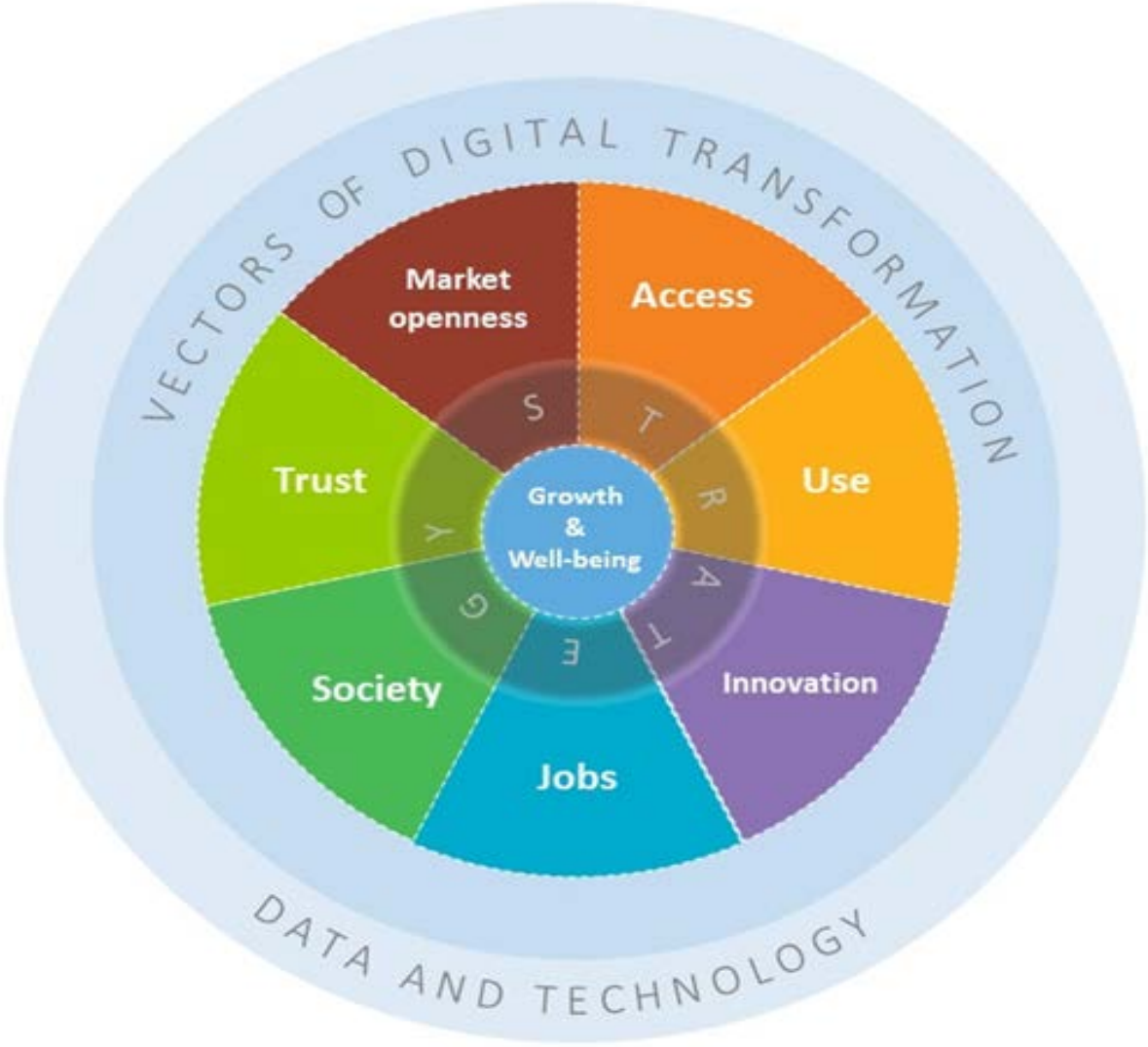
(Policies influencing AI adoption)

ACCESS: to technology, computing resources, data
USE: skills
INNOVATION: innovative services / start-ups/SMEs
MARKET OPENNESS: open and inclusive development

(Policies addressing consequences)

JOBS and transitions
SOCIETY: fairness and non-discrimination
TRUST: transparency and accountability, privacy, security, human rights, safety, responsibility, liability,

Using the Going Digital policy framework
- Key for AI policy issues -



Main Policy Issues:

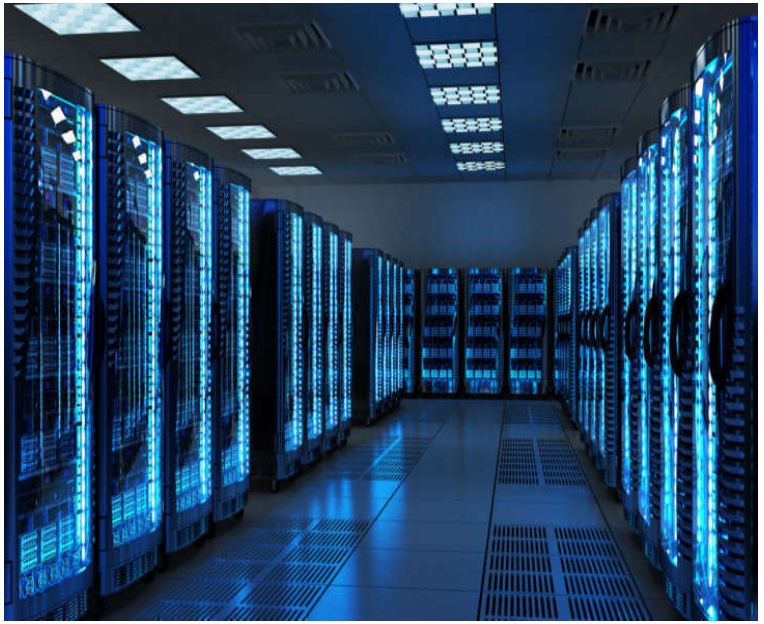
Access
Use
Innovation
Jobs
Society
Trust
Market Openness

Contributing to an Integrated Strategy for Growth and Well-Being (or for AI)

Access (data, technology, computing power…)

DATA

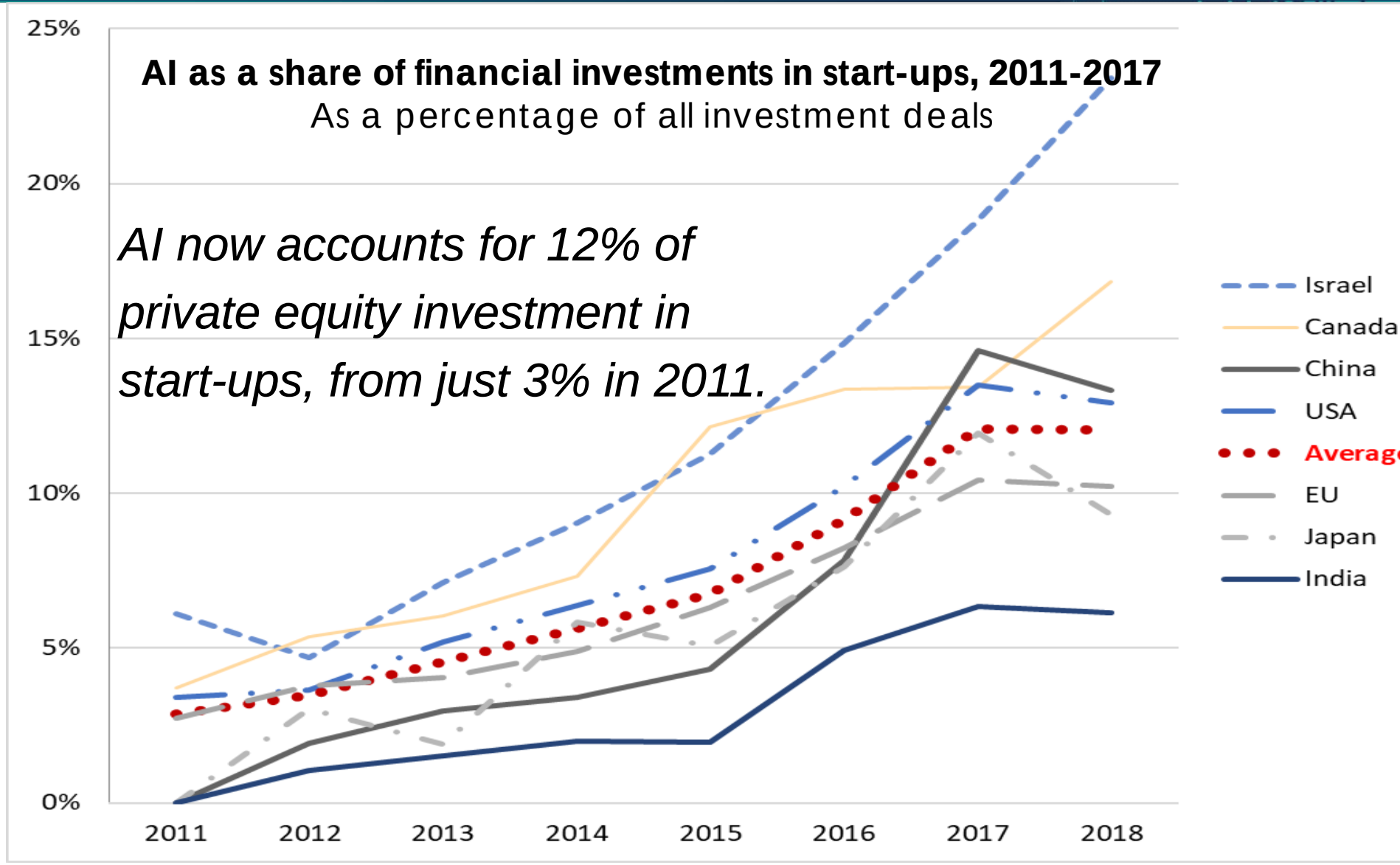
- AI relies on, and leverages data in fundamentally new ways
- Network and scale effects



How to enhance access to data

- Curated and accurate data
- SME access
- Public interest and global challenges (e.g. a Global Data Commons)?

Innovation – opportunities for entrepreneurship

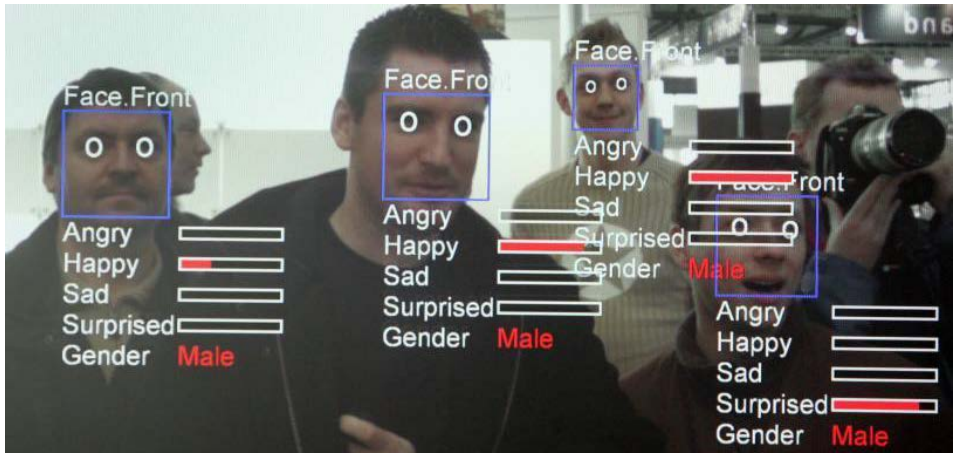


Jobs

- AI capabilities already match or exceed human performance in many domains.
- Can replace some tasks previously performed by people.
  - job automation
  - downwards impact on wages of workers most at risk,
  - long-term and short-term;
  - especially lower & medium-skilled, routine jobs.
- On the other hand, AI creates new opportunities and activities.
- Role of public policy:
  - skills policies
  - social protection and dialogue
  - new job creation

Society and trust, e.g. privacy and bias, …

Profiling, monitoring, automated decision-making, algorithmic bias



AI challenges collection and use limitation, purpose specification

- Individual control
- Impact assessments
- Privacy by design

…, and transparency

- Understanding / explaining how systems operate, which factors influence result, level of certainty
- Detecting bias
- Being able to challenge results

2. OECD Policy Observatory on AI

The OECD AI Policy Observatory (to be launched in 2019) will provide insights on public policies to ensure AI's beneficial use:

(1) Across government

The Observatory will be a center for evidence collection, debate and guidance for on how to ensure the beneficial use of AI (including government foresight function).

(2) Engaging all stakeholder groups

The Observatory will engage a broad spectrum of actors from different stakeholder groups to help address legal, ethical, cultural and technical facets of AI.

AI Expert Group at the OECD - AIGO

- Multistakeholder
- Experts nominated by delegations and invited by the Secretariat
- Several meetings to scope OECD principles to foster trust in and adoption of AI

Scoping principles

1. **General Principles**: (e.g.) Inclusive growth, well-being, human values, transparency, explainability, accountability,…
2. **Operational Principles**: (e.g.) design, development and operation of AI
3. **Principles for AI policy frameworks** (e.g.) dialogue, innovation, access to data, internayional cooperation,…

AIGO –
"A good move by the OECD"

Garry Kasparov,
former world chess champion

4 September 2017

Q&A