

TORTOISE[®] NOTES

Introducing The Global AI Index



Headline partner



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How we got here

1789 Freiherr Joseph Friedrich zu Racknitz, a Dresdenite and court marshal, engraves an image depicting 'The Turk' – a mechanical device that simulates the playing of a chess game.

1944 Herb Simon, an American cognitive psychologist, lays the foundation for information-processing, and symbol manipulation as part of a theory of psychology.

1950 Alan Turing's seminal paper in Mind, "Computing Machine and Intelligence", introduces his concept of the Turing Test.

1955 Claude Elwood Shannon, a renowned mathematician, proposes a "2 man, 10 man" study of artificial intelligence, to unravel its full potential...

1963 Edward Feigenbaum and Julian Feldman publish Computers and Thought, a book collecting the various descriptions of working artificial intelligence programs.

1966 Joseph Weizenbaum, a professor at MIT, creates ELIZA, a natural language processing program that acts as Rogerian Psychotherapist.

1986 Ken Olsen, founder of Digital Equipment Corporation, estimates that artificial intelligence is saving his company \$40m per year.

1989 Dean Pomerlau, whilst at Carnegie Mellon University, builds an autonomous Pontiac Transport minivan, which drives 2,797 miles across The United States.

1997 Garry Kasparov loses to IBM's Deep Blue supercomputer at chess.

2011 Brad Rutter and Ken Jennings are defeated by Watson AI, a question answering computer system, at Jeopardy!

2012 Jeff Dean and Andrew Ng, researchers at Google Brain, create an enormous neural network of 16,000 computer processors.

2016 Lee Sedol, a 9-dan professional Go player, is defeated by AlphaGo without handicaps.

2017 The Pan-Canadian AI Strategy, the first national strategy for artificial intelligence, is published.

2019 Dave Levin and his team, at the University of Maryland, begin developing 'Geneva', a tool that learns to identify and circumvent online censorship strategies.

Artificial intelligence

Emergency or opportunity?

"Everything we love about civilization is a product of intelligence, so amplifying our human intelligence with artificial intelligence has the potential of helping civilization flourish like never before – as long as we manage to keep the technology beneficial."

Max Tegmark

President of the Future of Life Institute

"If we are to harness the benefits of artificial intelligence and address the risks, we must all work together – Governments, industry, academia and civil society – to develop the frameworks and systems that enable responsible innovation"

António Guterres

Secretary-General of the UN

A considered approach

The Global AI Index uses "Artificial Intelligence" as "an umbrella term to cover a set of complementary techniques that have developed from statistics and computer science... it is useful to see these technologies as a group" when considering how they operate on a national scale, and in a sense that is relevant to the policy-makers.

Growing the Artificial Intelligence Industry in the UK, Professor Dame Wendy Hall and Jérôme Pesenti

Artificial intelligence has been a focus of discussion amongst academics and researchers for decades, but only in recent years has it been the subject of strategic attention from national governments, private businesses and the general public.

National AI strategies released



More and more nations are announcing that they view artificial intelligence as a transformative technology which will come to support future economic and social advances.

Since 2017, upwards of 30 national strategies for artificial intelligence have surfaced in various forms. For example, The United Kingdom’s “Artificial Intelligence Sector Deal” in 2019, and Sweden’s “National Approach for Artificial Intelligence” in 2018, both represent the steps that governments are taking to formulate a strategic pathway into a future increasingly driven by artificial intelligence.

Inflection points and significant factors

“A remarkable time of human promise has been ushered in by the convergence of ever-expanding availability of big data, the soaring speed and stretch of cloud computing platforms, and the advancement of increasingly sophisticated machine learning algorithms.”

Understanding Artificial Intelligence Ethics and Safety

The Alan Turing Institute

Computational power The power of available computers has increased dramatically. The growth of computational power is so extreme that it is difficult to visualise; with increases calculated in the trillion-fold.

Open source software resources The rise of open source resources for software use and development has rapidly expanded the transfer of ideas and information. Collaboration can take place across global networks; with development being optimised against requirements and objectives, rather than geography.

Training datasets Machine learning, and deep learning, systems require data to learn from. This data, called ‘training data’, is often a pre-labelled or pre-defined set from which the algorithm can extract salient patterns and develop a conception of future patterns or correlations.

The emergency: accelerating benefits and biases.

The rapid development of artificial intelligence techniques has generated a host of ethical concerns. How do we apply our existing values, principles, and standards for establishing right and wrong to the fast-changing domain of artificial intelligence? Who sets these rules, and polices them?

There are disaggregated calls for a strategic response to this quandary. But – as things stand – there is an appreciable risk that this new technology will only entrench the power of the wealthy and the privileged, accentuating rather than closing the gap between the powerful and the powerless.

How do we establish a set of objectives?

- Target improvement in digital infrastructure
- Target increases in investment flows
- Target accelerated adoption in socioeconomic sectors and industry
- Target informed regulation in terms of privacy and ethical standards

Source: WEF Centre for Fourth Industrial Revolution, A Framework for Developing a National Artificial Intelligence Strategy.

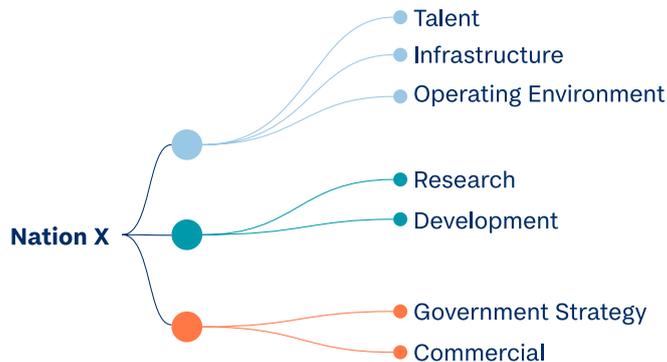
The Global AI Index: Mapping the landscape of artificial intelligence

The Global AI Index was born out of conversation with representatives from national governments involved in the scramble to develop and implement policy-based initiatives to foster greater capacity for artificial intelligence.

The collaborative role that many governments are aiming to play; co-designing, rather than merely responding to, technological change across multiple sectors required relevant and reliable information.

Our framework

The seven pillars



The Global AI Index surfaces insights about the main drivers of artificial intelligence; such as specialized talent, research and development, venture capital and infrastructure. It's a detailed journey into the race amongst these 54 nations.

We hope that the story of The Global AI Index will be one in which many stakeholders are brought together on a regular basis to discuss the era-defining transformations taking place across the world.

