

Policy recommendations

Artificial intelligence

The opportunity

Opportunities for artificial intelligence (AI) to augment human capabilities and improve society are nearly unlimited. With the advent of self-driving cars, digital personal assistants that can anticipate our needs, and computerized health diagnosis, AI is beginning to change people's lives for the better. Recent progress in AI is built on advances in machine learning, reasoning, and perception—all of which are facilitated by the power of cloud computing.

By enabling vast amounts of data to be analyzed quickly and at scale, and by connecting personal devices to the computational resources of entire datacenters, cloud computing has become an essential platform for the delivery of AI services. The cloud also ensures that AI services will be affordable to all, even though they often require vast computer-intensive infrastructures.

The challenge

It is estimated that the market for AI services will grow from 420 million U.S. dollars in 2014 to 5 billion U.S. dollars by 2020. Benefits to the broader economy could also be enormous—a recent study by Bank of America Merrill Lynch estimated that AI technology will deliver up to 2 trillion U.S. dollars in cost efficiencies globally.

Expansion at this growth and scale is not guaranteed. AI requires access to vast amounts of data, but laws and government policies can hinder beneficial access. AI also raises important ethical and privacy concerns that could erode trust in cloud computing if they are not addressed thoughtfully.

Policy recommendations

To foster innovation in AI and the implementation of AI capabilities, governments should create legal and policy frameworks that enable access to data, encourage investments in AI technologies, and ensure that AI technologies are trusted. The advent of AI is raising new issues and questions that must be carefully considered and addressed in order to support AI innovation and preserve timeless values such as respect for individual autonomy and privacy.

Modernize laws and practices to enable AI. AI requires access to data—machines cannot “learn” unless they have large data sets from which to discern patterns. Governments should carefully assess whether existing data access laws need to be updated to account for the benefits of AI. For example, while copyright laws should fully protect the expressive value of a work, they should not restrict the analysis of creative works to extract data that could lead to useful AI insights in ways that do not compete with copyright owners. When it comes to personal information, governments should carefully weigh privacy interests against the benefits of AI insights based on access to data. Governments can also play an important role in speeding the transformational impact of cloud computing by encouraging companies to contribute data to common pools for data analysis with results shared in ways that do not disclose trade secrets or proprietary information. In addition, governments should ensure that all data they collect is available to the public for analysis, subject to privacy and national security considerations.

Encourage development of ethical best practices. The advent of AI raises new ethical questions. For example, it could be used to invade personal privacy by accurately inferring information

that people would prefer to keep private. It can inadvertently perpetuate discrimination. AI also raises potential safety concerns, such as when driverless cars have to pick among two bad choices when seeking to avoid an accident. These and other cases suggest that transparency about AI analysis will be critical in any ethical framework. Governments, industry, and civil society should begin to work together to weigh the range of ethical issues that AI raises, with the goal of developing guidelines and best practices. As experience with AI broadens, it may make sense to establish more formal industry standards that reflect consensus about ethical issues but that do not impede innovation and progress in the development of AI capabilities.

Assess privacy law in light of the benefits of AI. In an era of increasing data collection and use, privacy protection is more important than ever before. To foster advances in AI that benefit society, policy frameworks must protect privacy without limiting innovation. For example, governments should encourage the development of anonymization techniques that enable analysis of large data sets without revealing individual identities and enact laws that recognize the value of anonymization in preserving privacy. Privacy law should also recognize that data collected for a particular purpose may lead to beneficial AI insights. To support useful research, governments should provide reasonable latitude in assessing whether data used for AI analysis is within the scope of its original purpose. While privacy law should account for the benefits of AI, new regulations may be required to address concerns about the predictive power of AI, such as the possibility that AI systems may infer private information about people.

Lead by example. Governments and multilateral institutions can help drive adoption of AI by launching projects and systems that take advantage of cloud-powered AI. This will

require attracting data scientists to work on government projects. Government can also support AI through procurement programs that provide incentives to speed the development and adoption of AI-based innovation. Public-sector research investments in AI-related projects will also help facilitate innovation, including industry-led development of the tools needed to make the benefits of AI widely accessible.

Evidence and further reading:

McKinsey Quarterly: ["An Executive's Guide to Machine Learning"](#)

Stanford University: ["Artificial Intelligence and Life in 2030." One Hundred Year Study on Artificial Intelligence: Report of the 2015-2016 Study Panel](#)

Slate: ["The Partnership of the Future"](#)

The New York Times: ["The Race Is On to Control Artificial intelligence, and Tech's Future"](#)

For links to these and other resources, please visit:

<http://www.microsoft.com/cloudforgood>