What are artificial intelligence and machine learning and how are they different from each other?

Artificial intelligence (AI) is an umbrella term for technology that behaves with human-like intelligence. Essentially, it refers to any technology that can "think" without explicit instruction from a person. Technologies with artificial intelligence can do a variety of things, like learn, predict, classify, recommend, and infer.

Machine learning (ML) is an application of AI that teaches computers how to learn and complete tasks without specific instructions from programmers, usually by using large amounts of data. It is one of the most common AI techniques used today.

How are AI and ML being used and where are they headed?

Machine learning and, more broadly, artificial intelligence, are already being used in our day to day lives, whether that be through recommending items for us to buy while online shopping, predicting fraudulent charges to bank accounts, detecting traffic patterns, filtering out spam emails, or helping us unlock our phones with our faces.

AI is also rapidly expanding in virtually every sector, due in large part to the increased access to big data in the past decade. AI is poised to become even more present in our daily lives than it currently is, and this rapid advancement comes with both great promise and potential challenges.

- Some potential benefits include faster data analysis, optimization of complex tasks, surfacing alternative solutions and findings, and improved safety.

- At the same time, potential risks include the amplification of bias, "black box" algorithms (the use of models that are so complex that even the programmers who created them cannot understand all the variables), and the overall lack of regulation of AI in the US.

Why are we talking about it now?

The development of AI capacity is seen as an important goal across both sides of the aisle. On June 8, 2021, the Democrat-controlled US Senate passed the US Innovation and Competition Act (S. 1260), which will invest over $200 billion into science and technology over the next five years, including into artificial intelligence research. In January of 2021, President Trump created the National AI Initiative, a task force coordinating AI research across the government.

However, policymakers are also starting to examine some of the potential risks of AI. Many argue that the first step towards regulating AI at the federal level is to increase research and understanding. As federal rules and legislation seek to mitigate the negative effects of AI, they will undoubtedly intersect with other important tech policy issues like data governance and privacy. See the sidebar for specific examples.

KEY FEDERAL AI POLICIES

Executive Order 13859: Maintaining American Leadership in Artificial Intelligence

This Executive Order, signed in February 2019, established the American AI Initiative to increase AI research and development in the US.

National Artificial Intelligence Initiative Act of 2020 (Division E, National Defense Authorization Act for Fiscal Year 2021)

This law establishes the National Artificial Intelligence Initiative (NAII), whose main goal is to coordinate AI research across the federal government. It also led to the creation of the National Artificial Intelligence Initiative Office (NAIIO) within the Office of Science and Technology Policy (OSTP), whose main goals include overseeing interagency AI use and serving as the main point of contact for any activities related to the NAII. In addition, it establishes the National Artificial Intelligence Research Resource Task Force as a partnership between OSTP and the National Science Foundation focused on expanding resources to promote AI research across the US.

Artificial Intelligence Risk Management Framework

This framework, currently being developed by the National Institute of Standards and Technology, contains guidance for ways to protect people and organizations from the risks associated with the use of artificial intelligence.

OUR EXPERTS

Allison Day

Neal Parikh

Ashley Llorens

Brandie Nonnecke

Samara Trilling

Ora Tanner

To contact the fellows for media inquiries, please visit: aspentechpolicyhub.org.