UNDERSTANDING AI

BSA members include many of the world's leading suppliers of software and online services to organizations of all sizes and across all industries and sectors. BSA members have made significant investments in developing innovative Artificial Intelligence (AI) solutions for use across a range of applications. As leaders in AI development, BSA members have unique insights into both the tremendous potential that AI holds to address various social challenges, and the types of governmental policies that can best support AI innovation and its responsible use.

The range of potential benefits from the smart use of AI is vast. AI solutions are already leading to improvements in healthcare, advances in education, more robust accessibility tools, stronger cybersecurity, and increased business productivity and competitiveness. AI also has the potential to generate substantial economic growth and enable governments to provide better and more responsive government services while addressing some of their most pressing societal challenges.

AI Is a Tool to Improve Decision-Making, Not a Substitute

Virtually all AI systems at their core assist in analyzing data to find connections that improve the quality and accuracy of human decision-making. AI systems use sophisticated algorithms implemented through software tools. An algorithm, in turn, is a set of instructions that collects inputs and provides an output in a systematized method. The algorithms used in AI are often particularly well-suited to analyzing massive volumes of data from many different sources, and reflecting variables that may interact in complex and unexpected ways. AI algorithms enable technological solutions that enhance perception, learning, reasoning, and decision-making aimed at improving the ability of people to solve complex and challenging problems.

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Although some AI systems are sometimes described as "autonomous," the fact is that very few AI systems operate independently of human direction. AI systems are tools to aid, rather than replace, human decision-making. AI systems can be used in an almost unimaginably wide variety of contexts, and to improve a diverse array of experiences across a range of applications and devices. There is no one-size-fits-all version of AI, and the design of each will depend on the context in which it is used.

Benefits of AI

At their core, AI systems augment human intelligence. Specifically, AI systems assist in the analysis of data to find connections that improve the quality and accuracy of human decision-making. There are myriad examples across a wide swath of industry sectors that illustrate the benefits of AI technologies.

» **Accessibility.** AI solutions, powered by data analytics, are at the heart of new devices and applications that improve the lives of people with disabilities. For instance, AI is helping people with vision-related impairments interpret and understand visual content, such as photos and their physical surroundings. This technology opens new possibilities for people with vision impairments to navigate the world, giving them increased independence and greater ability to engage with their communities.

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» **Healthcare.** AI technologies are helping hospitals provide more affordable healthcare while achieving better patient outcomes. Physicians can now harness AI to analyze large volumes of data, including patient information and medical test results, to identify the best possible treatment options for cancer patients.

» **Financial services.** AI is improving fraud detection by providing companies with real-time information that helps them to identify and investigate different types of fraud, reducing the losses attributed to fraudsters by billions of dollars.

» **E-Commerce.** AI is enabling online business transactions to occur more quickly and more securely by making it easier to authenticate identity and reduce the friction needed to establish trust in digital transactions of all kinds.

» **Government services.** AI is helping governments improve constituent services in ways that save time, money, and lives. For example, cities are optimizing medical emergency response processes using AI-based systems, enabling them to more strategically position personnel and reduce both response times and the overall number of emergency trips.

» **Education.** AI tools are changing how schools are run and how educators teach students, including by helping them quickly identify students that need particular attention and develop personalized lesson plans that tailor instruction, content, pace, and testing to individual students' strengths and interests.

» **Cybersecurity.** AI tools are revolutionizing approaches to cybersecurity. AI is streamlining network defense, helping analysts parse hundreds of thousands of security incidents a day to automatedly respond to routine incidents and direct security professionals to focus on truly significant threats. AI tools are also being used to identify software vulnerabilities before release, bringing more secure products to the marketplace.

Whether it is improving health outcomes, detecting financial fraud, or enhancing emergency or educational services, the effects of new AI technologies are already visible in every industry, in every state, and across the globe.

The Economic and Social Effects of AI

Although most of us will experience the benefits of AI in the coming years at an individual level, AI is also set to have significant macro-economic and societal benefits as well. Experts predict that applications of AI technologies could grow the global economy by between $7.1 to $13.17 trillion over the next eight years.[1] In the United States, the market for AI technologies that analyze unstructured data is expected to reach $40 billion by 2020, creating more than $60 billion worth of productivity improvements each year.

Along with job creation and economic growth, there are concerns that AI will lead to some jobs being displaced. It is important that both industry and governments address these concerns, but also recognize that "many new jobs will also be created — jobs that look nothing like those that exist today," including the "emergence of entire categories of new, uniquely human jobs" that will require "skills and training that have no precedents."[2]

BSA members have already begun helping workers develop new skills that will prepare them for the jobs of the future. BSA members offer high-tech and business training programs, including at the high school level. There are also programs that explore new innovative approaches to using AI to connect skills to available opportunities, moving the dialogue from job experience to skills that are needed. These initiatives illustrate just some of the ways in which AI-based employment concerns can be meaningfully addressed.

As these technologies are increasingly deployed, companies recognize the importance of providing meaningful information to enhance understanding and instill confidence in AI systems. While research has shown that disclosing the algorithms themselves or source code is ineffective in providing explanations, in part because they cannot be meaningfully understood in isolation, industry efforts that provide users of AI systems with the information necessary to instill confidence that such systems are operating as intended are important. Facilitating increased understanding and promoting trust in the use of AI technologies is a priority.

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1   *See Artificial Intelligence in Canada: Where Do We Stand?*, Information and Communications Technology Council 2 (April 2015), available at https://www.ictc-ctic.ca/wp-content/uploads/2015/06/AI-White-paper-final-English1.pdf (*citing Disruptive Technologies: Advances That Will Transform Life, Business, and the Global Economy*, McKinsey Global Institute (May 2013), available at http://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/disruptive-technologies).

2   H. James Wilson, Paul R. Daugherty, and Nicola Morini-Bianzino, "The Jobs That Artificial Intelligence Will Create," *MIT Sloan Management Review* (March 23, 2017), available at https://sloanreview.mit.edu/article/will-ai-create-as-many-jobs-as-it-eliminates/.