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How AI Can Bring About Social Good

Artificial intelligence and machine learning can make sorting through voluminous documents easier and faster by automatically identifying and classifying records. Photo credit: ADB.

AI is disrupting the social sector, enhancing the way basic services are delivered to the public.

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Introduction

New technology applications are disrupting many sectors by solving problems that were impossible or too time-consuming to handle.

The deployment of artificial intelligence (AI) is typically used in the corporate setting. Tech companies such as Amazon, Facebook and Tesla have adopted machine learning effectively by providing "chatbot" tools that guide their customers to make decisions without the assistance of experts.

AI is also now used to sort through millions of accounts to match lost pensions with pensioners correctly. It is making inroads in healthcare for diagnostics, analysis of diseases, and records management. In the People's Republic of China (PRC), AI algorithms review millions of CT scans for signs of cancer, making up for the lack of radiologists to handle the diagnostic load.

AI is also proving disruptive in what we call the social sector: government agencies and non-government

organizations for which paramount concerns are not profit and shareholder value but accuracy, integrity, and timeliness.

Three Subsets of AI

Applying AI in the social sector involves its three key branches: natural language processing (NLP), computer vision, and speech recognition, where humans used to be far better than machines. With improved and cheaper computing power, along with advances in algorithms, it is now possible for computers to accomplish tasks that human ears, eyes, and brains used to do. It might not be applicable to every task but in many, AI has proven quicker and more accurate. It plays an important role in enhancing transparency and access to public services, especially in terms of quality healthcare for all.

NLP is the understanding and analysis of human language in voice and text messages by computers.

With social media playing an increasingly critical role in democratic societies, maintaining credibility of information in social media has become vital for governments. Perhaps, due to pressure from good governance promoters as well as independent non-profit organizations, social media such as Facebook has been forced to clean up. The main AI tool employed by Facebook and other social media is NLP. Without NLP and lightning-fast cloud computers, there is no way to stop fake news.

NLP is also increasingly used in helping to catch fraud in insurance systems. Canada, India, and the United States are some of the countries where AI is widely used with impressive results.

Computer vision is the ability of computers to "see" images and videos and identify the contents, just like humans identify objects. This makes possible autonomous vehicles—from cars and buses to lorries and drones. Using AI algorithms, computers can identify a dog, human, traffic light, building, and road sign. Tech leaders such as Uber claim that self-driving cars are much safer.

Computer vision-based systems are expected to benefit smart cities, especially in crime, traffic, and pollution control.

Speech recognition algorithms train computers to understand the sounds that humans make. This has led to a major disruption in elderly care, especially in Japan, which has the world's highest percentage of people aged 65 and older. Robots that can understand human sound bites help make up for the shortage of nurses. As AI-driven speech recognition develops further, it is going to change how the telemarketing business is done now with call centers located in countries, such as India and the Philippines, where labor costs are low. Eventually, computers and cloud computing will take over their role.

NLP, computer vision, and speech recognition are all systems that provide input to computers. When the computers take these inputs and figure out by themselves what decisions to make, that is called machine learning (ML). Thanks to ML algorithms, computers learn more and more over time as they process more and more data and make more and more decisions.

Top Innovators

Countries leading the AI revolution are the PRC, US, and Japan. Based on the total number of research articles on AI published by technical experts from 2011 to 2015, the PRC produced 41,000; the US, 25,000; and Japan, 11,700. They were followed by the United Kingdom and Germany. Notably absent from the list is India, which has gained a global reputation as a software powerhouse; perhaps an explanation for this is the migration of many Indian IT specialists to the US.

The PRC has applied AI to almost everything. One of its advantages is its large population of internet users. It is therefore accumulating huge amounts of data. Analysis of this information can solve many problems. Applications can diagnose childhood diseases as well as or even better than doctors.

The US is the world's pioneer in using AI for commercial applications. Companies such as Amazon and Salesforce have constantly been providing and using AI tools for private enterprises available on a cloud platform. Non-profit giants such as United Way, a coalition of charitable organizations, have started using AI-supported techniques to improve their fundraising.

Japan has long focused on hardware, integrating AI into disruptive product innovations. Some of the world's first smart devices, such as rice-cookers and microwave ovens, used an early form of AI known as fuzzy logic. Now, Japanese companies have integrated AI and machine learning into industrial robots, disrupting the manufacturing, delivery, and logistics sectors. Thanks to smart robots, production lines are now organized for mass customization to produce what individual customers ordered at high quality and in any amount.

The Japanese government recently announced that it would build 10 AI hospitals to get around the shortage of doctors and cut costs. Japan could disrupt the global healthcare ecosystem if it were to export this concept to other countries that also lack healthcare facilities and professionals.

Japan does not generate nearly as much data as the PRC. It has the lowest percentage of computerized medical records among the Organization for Economic Co-operation and Development (OECD) countries. To get around the data shortage, the Japanese government is promoting tie-ups between hospitals and information technology companies to facilitate big data needed for testing data analytics and AI.

AI and the SDGs

The adoption of AI and machine learning in the social sector is generally aimed at improving efficiency, consistency, and accuracy in addressing the 17 Sustainable Development Goals (SDGs). Disruptive technologies can empower people who are otherwise limited by their age and abilities.

Governments will need to work with business and industry to set standards and policies, and in some cases, provide funding as well.

The social sector generates huge amounts of data. The key to successful and sustainable integration of AI and machine learning to benefit the SDGs is ensuring security in handling big data. This is necessary to build trust in the machines that will be helping humans do their good work in a sustainable way as demanded by the SDGs.

A recent study identified AI as an enabler in achieving almost 80% of the 169 targets of the SDGs. With two of the three leading AI countries in Asia (the PRC and Japan), it is likely that the region will see many innovations contributing to achieving the SDGs.

This article is adapted from "AI and the Disruption of Social Sectors," which was first published on AsiaGlobal Online.

Resources

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Jay Rajasekera
Vice-President and Professor of Digital Business and Strategy, Tokyo International University

Jay Rajasekera began his professional career in 1984 at Bell Laboratories in New Jersey, United States. He designed and patented the "repeater optimization" algorithm for the construction of the world's first undersea fiber-optic cable. A large percentage of the world's internet traffic is carried over the optical cables built using his algorithm. Rajasekera is also an award-winning *sumi-e* (Japanese ink painting) artist.