

Summary

Expectations of the benefits of artificial intelligence (AI) are rising. Being in the midst of the 3rd AI boom, we should be careful not to create unreasonable expectations. We should also not regard the current boom as transient, and consider AI as interacting and assimilating with society. Thus, understanding the possibilities and limitations of the technologies is necessary. For example, paying attention to not just boom-leading technologies, such as machine learning, which are directly related to the processing of knowledge and data in AI, but also technologies for human-machine interfaces, as well as those applying AI to industry and human lifestyles is essential. Along with an understanding of the social background, the technological trends, and the potential applications that have kindled interest in these technologies, social issues that would emerge from their application should also be considered.

It should be understood that the contentious issues and the reorganization of employment and workplace being attributed to cutting-edge AI technologies are often the result of conventional information and communication technologies. Therefore, identifying concrete examples of problems that have already emerged in the workplace is important. Workplace actors that should be considered range from technology developers to end-users; their relationships are relative because sometimes users will engage in research and development (R&D), and at other times, become data providers. Among these actors, the effects on labor and employment are already keenly felt by experts in industries, such as healthcare, elderly care, art and design, education, hospitality, transportation and mobility, agriculture, and security, where AI and robotics have been introduced in the workplace. Looking at concrete examples, the short-term effects of the introduction of AI and robotics should be characterized as the “substitution of tasks” rather than the “replacement of jobs.”

AI improves its performance by learning from vast volumes of data, including image and audio. Therefore, organizing data by considering personal privacy protection, including privacy issues and data biases, is necessary. Moreover, AI does not stand alone but functions within infrastructure, such as communication networks and hardware. It also interacts with communities, institutions, economics, human values, and organizational culture; this means that AI might not necessarily be used as intended by its developers. Currently, R&D guidelines for the AI developers are discussed. However, we also have to widen our perspectives on how domain experts reorganize their tasks by using AI and robotics in the workplace based on the performance and limitation of the technologies, social contexts, and human values.

The employment and labor issues related to AI and robotics vary according to the country, region, and sociopolitical context considered. Many countries, including Japan, consider them to be a pillar of industrial growth and economic development but in enhancing both the economic rationale and efficiency of their performance, the environment and human work styles are sometimes altered. This may pose the risk of nudging and restricting workers' and consumers' behaviors. Further, the environmental and health impact should be considered. Therefore, we need to educate not only AI- and robotics-skilled people, but also those who understand the ethical, legal, and social implications of properly introducing AI and robotics to our society.