

Introduction

Arnaud de La Fortelle,
PSL – MINES ParisTech

Artificial intelligence (AI) is fascinating: the human mind ramped up by computers!¹ The consequences are fantastic both operationally and socially, to such a point that the development of forms of AI has sparked warnings from Stephen Hawking and Bill Gates about the possible end of humanity. Many others have called for vigilance. We need but read the list of signatories of the Future of Life Institute's open letter.² These persons are not technophobes or ignoramuses. So, where are we headed?

As a starter, what is AI? A conventional response compares AI to human activities, usually for the purpose of distinguishing between the two (the Turing test) or even making them compete, and sometimes (for transhumanists) detecting the point when human beings will be fully supplanted. These presentations are effective and attractive but ultimately very prospective, about a faraway future. Although the rollout of AI algorithms is having impressive consequences, reality does not resemble works of fiction.

This special issue seeks to understand what AI does and how it does it and, in addition, to ask what it does not do. A few experts have been invited to shed light on the interactions between artificial and human forms of intelligence. Collaboration, rivalry, substitution? And adaptation?

The first section herein, on AI and big data discusses, concrete applications. AI is presented as algorithms for statistical inferences (learning) that make it possible to perform certain tasks: recognize objects, process information, predict, etc. When applied to many concrete problems, these techniques have already brought genuine benefits. Two good examples come from the articles on cobotics and human-robot interactions (V. Weistroffer) and AI as a lever for change and innovation at the RATP (C. Berbain and Y. Amsterdamer). In the case of driverless vehicles (A. Lafay and G. Devauchelle), questions crop up about the interactions between human experts and AI with its "superhuman performance". Even for tasks out of human reach, such as the compilation of big data for corporate strategies (H. Isaac), we clearly see that the output from AI is valuable but not perfect, and that adjustments have to be made when rolling out AI applications (as is now happening on a massive scale). Even though AI is so powerful that no activity seems to escape from it, feedback from experience has demonstrated that AI cannot do everything.

The AI processes currently being (or about to be) commercialized always involve interactions with human processes. The first section in this special issue touches on the topic of the interactions with experts, data scientists and engineers. But what about other stakeholders? Are we to bend the knee before AI's faster decision-making and its ability to digest stores of data, while only a very few experts actually understand how it works? D. Guégan has explored this tough question about the interpretability of algorithms in the second section about how people use AI-made decisions. Notions such as "skewed data", "fairness" and "risk" are relevant. But if AI is to take them into account, we must precisely formulate them. What do we mean by fairness? This is a hard question for human beings and for AI. After all, data (or numbers) are not the absolute truth. The article about AI and management control (C. Moinard and N. Berland) focuses on our relations to numbers, about the meaning we give to statistical indicators and about how we make meaning. The risks related to using AI have to be brought under control, especially in the domain of national security (J. Barnu). When these risks become actual, adjustments will have to be made, as in the field of the law:

¹ This article has been translated from French by Noal Mellott (Omaha Beach, France). All websites were consulted in March 2021.

² <https://futureoflife.org/ai-open-letter>

“How to legally regulate artificial intelligence?” (A. Bensoussan). AI is already bringing up profound questions about organizations and their objectives. Our interactions with AI do not take the form of a genuine dialog. For sure however, AI is going to continue upending our ways of doing things.

The forms of AI being installed in organizations require adjustments and adaptations by both people and machines, the topic of our third section. AI techniques are evolving very fast, but we have never seen a form of AI evolve outside its field of application. The AI Go champion probably cannot drive a car. Can we sketch how AI will evolve in the coming years? Since prospective studies soon become an exercise in divination, let us limit the time frame to the short term — a few years for which we might have a reasonable degree of visibility. To better understand our relations to AI, it is worthwhile examining our cognitive representations of it. Is there “One or many AIs?” (A. de la Fortelle). In response to a burning issue — will AI steal our jobs? — S. Benhamou’s article clearly describes the changes under way, which range from the replacement of employees, of course, to many examples of complementarity and, above all, the important adjustments to be made by workers and organizations in order to benefit from AI. A consonant view (even though the authors of these two articles did not work together) is found in Y. Caseau’s “The future of work”: the relation between people and AI is very strong, rife with opportunities — that might turn into risks — for society. Will we be able to pick the best from these new techniques? As described in E. Berlinski, I. Bello and A. Gaudron’s article, the application of AI techniques in penal law will require major adaptations. The management of typically human emotions by AI (the “empathic machines” described by L. Devillers) is going to alter our relations. How will AI “manage” our emotions... or the law? Beyond any doubt, AI figures among the changes that humanity has undergone in order to become what it now is. AI can evolve, and we are capable of evolving too.

In conclusion, human and artificial intelligence match each other. AI needs us for its development and, too, for it to efficiently perform tasks in our organizations. AI is changing our world, maybe like all the tools invented by mankind, maybe a little more. May this special issue enable our readers to form their own opinion!