



Power and Limitations of Artificial Intelligence



One of the key issues today concerns the place of the human person in a growing digital environment of increasing complexity that not only expands the range of his or her capacities, but also may compete with them or even replace them. Over the past fifty years, robots and computers have progressively supplemented humans, initially only in relatively simple computational and manipulation tasks, but more recently in higher cognitive tasks that used to be the prerogative of the human brain, including language, mathematics, probabilistic reasoning and decision making. A crucial question is how to enhance the productive interactions between humans and artificial intelligence (AI). As such interactions reach new orders of complexity, many researchers and philosophers feel that the outcome may defy our understanding and produce radical changes in our personal and social life in the near future.

Our Academy has already organized several meetings on the organization and functions of the human brain and mind (*The educated brain*, 2003; *Human neuroplasticity and education*, 2011; *Neurosciences and the human person*, 2012). We propose now to study the *Power and limits of artificial intelligence*.

What is the state of the art in AI software and machine learning? Can all aspects of brain function be mimicked by artificial systems? Will machines soon surpass us in all domains of human competence? What is the proper form of mathematics that may capture the operation of minds and brains? What is consciousness? Could a machine be endowed with an artificial consciousness? What would it take for a machine to possess a sense of self? Will intelligent machines soon pose a danger to humanity? Is it possible to design and construct an intelligent

robot endowed with an artificial sense of ethics? How can we enhance the humanitarian uses of artificial intelligence and robotics, in particular in the field of education, health and emergencies?

We know that all these questions are very difficult to answer today, but we want to open a discussion between experts of the different fields in order to map the new cognitive environment that humanity is creating for the first time in history.

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