Responsible AI in science for augmented medicine and healthcare

Breakthroughs, insights, and policy prospects

Matteo Bonazzi

In a nutshell

This book addresses AI uptake in nano-bio-pharma sciences, discussing its key breakthroughs, drivers, insights and prospects for augmented medicine and health care to contributing to EU policies. For doing that, several steps have been discussed: (i) the etymon 'artificial intelligence' is philosophically and critically analysed to proposing "artificial logics" as a more suitable conceptual construal to assist human intelligence; (ii) the main drivers governing AI science embedment in augmented medicine are illustrated to show the EU as a world leader in AI enablers' patents, though underperforming in AI applications compared to US and China; (iii) the AI achievement gap between research and innovation in the EU is examined; (iv) it has been highlighted to what extent the groundbreaking power of AI relies more upon few innovative companies than on institutional research facilities; (v) key AI science breakthroughs in augmented medicine and health care are examined in diagnostics, theragnostics, targeted drug-delivery and regenerative medicine; (vi) crucial AI-related ethical principles are discussed, focusing on generative AI systems glossed by scholars as 'moral machines'. Last, conceptualizing the 'responsible-by-design' AI construal has been presented as a set of concepts pursuing human-centric objectives while circumventing the 'black-box' issue. All this could enable outlining far-sighted EC policies minded to nurturing the embedment of responsible AI to advance in augmented medicine and health care. Its ultimate impact would end up by building-up and consolidating citizens' trustworthiness and societal acceptance therein.

About the author

Matteo Bonazzi has worked as program officer in nano-bio-info-cogno converging sciences and technologies, as well as in communication outreach, at the European Commission from 2003 to 2024. Herein he has been managing fifty research and innovation projects over twenty years. He also worked for private and public bodies in Spain and Italy on science, sustainability, and culture. He authored 30 books and edited two on converging science and technologies, sustainability, and culture, written in several languages. He also authored fifty scientific articles and eighty contributions to proceedings and seminars on the same subjects. On the top of that, he conceived, designed, and developed six exhibitions and twenty workshops, contributing to newspapers, media programs and software. Last but not least, he gave lectures as Prof. Dr. habil. at the University of Vilnius (Lithuania), as well as speeches and lectures in twenty academic institutions worldwide. He graduated cum laude with honorable mention in Natural Sciences at the Turin University (Italy). Thanks to his dissertation in eco-ethology developed in central Africa at the Kenya Marine Fishery Research Institute of Mombasa (Kenya) he was awarded the title and Medal of "Best in the School" for best curriculum and dissertation by the academic Senate of Turin University (Italy). He holds a postgraduate European Master in Environmental Engineering, issued by the European Polytechnic Environmental Association at the Polytechnic of Turin (Italy) and the Université de Savoie (France), as well as a postgraduate International Master Specialization Course in Fats issued by the Consejo Superior de Investigación Científica of Seville (Spain). He holds a PhD in Environmental Engineering issued by the University of Surrey (England), awarded with honorable mentions by the Centre for Environmental Strategy of Guildford (U.K.) and the University of West Indies of Kingston (Jamaica). He possesses both work and research experience in Europe, Asia, Africa, and the Americas.