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# ARTIFICIAL INTELLIGENCE AND THE LAW



ARTIFICIAL INTELLIGENCE  
AND THE LAW

Jan DE BRUYNE  
Cedric VANLEENHOVE  
(eds.)



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## Artificial Intelligence and the Law

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## FOREWORD

Artificial intelligence (AI) is becoming increasingly more prevalent in our daily social and professional lives. AI can be of benefit to a wide range of sectors such as healthcare, energy consumption, climate change and financial risk management. AI can also help to detect cybersecurity threats and fraud as well as enable law enforcement authorities to fight crime more efficiently.<sup>1</sup> AI systems are more accurate and efficient than humans because they are faster and can better process information.<sup>2</sup> They can perform many tasks ‘better’ than their human counterparts.<sup>3</sup> Companies from various economic sectors already rely on AI applications to decrease costs, generate revenue, enhance product quality and improve competitiveness.<sup>4</sup> AI systems and robots can also have advantages for the specific sector in which they are to be used. Take the example of autonomous vehicles. Transport will become more time-efficient with autonomous car technology. Self-driving cars will also enable people currently facing restrictions for operating a vehicle – such as the elderly, minors or disabled people – to fully and independently participate in traffic. Traffic will become safer as well. The number of accidents will decrease as computers are generally much better drivers than humans.<sup>5</sup>

At the same time, however, the introduction of AI systems and robots will present many challenges. These will only become more acute in light of the predicted explosive growth of the robotics industry over the next decade.<sup>6</sup> AI

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<sup>1</sup> European Commission, Press Release, IP/19/1893, ‘Artificial intelligence: Commission takes forward its work on ethics guidelines’, 8 April 2019, [https://europa.eu/rapid/press-release\\_IP-19-1893\\_en.htm](https://europa.eu/rapid/press-release_IP-19-1893_en.htm).

<sup>2</sup> S.G. Tzafestas, *Roboethics: A Navigating Overview* (Athens: Springer, 2015), p. 147.

<sup>3</sup> H.M. Deitel and B. Deitel, *Computers and Data Processing: International Edition* (Orlando: Academic Press, 2014), p. 434. See in this regard the experiment with supercomputer WATSON and the identification of lung cancer cases (I. Steadman, ‘IBM’s Watson is better at diagnosing cancer than human doctors’, *Wired*, 11 February 2013, [www.wired.co.uk/article/ibm-watson-medical-doctor](http://www.wired.co.uk/article/ibm-watson-medical-doctor)).

<sup>4</sup> S.H. Ivanov, ‘Robonomics – Principles, Benefits, Challenges, Solutions’, *Yearbook of Varna University of Management*, 2017, vol. 10, pp. 283–285.

<sup>5</sup> See for example: J.R. Zohn, ‘When Robots Attack: How Should the Law Handle Self Driving Cars That Cause Damages?’, *University of Illinois Journal of Law, Technology and Policy*, 2015, vol. 2, p. 471; T. Malengreau, ‘Automatisation de la conduite: quelles responsabilités en droit belge? (Première partie)’, *RGAR*, 2019, vol. 5, nos. 15578–15607. Also see: J. De Bruyne and J. Tanghe, ‘Liability for damage caused by autonomous vehicles: a Belgian perspective’, *Journal of European Tort Law*, vol. 8, no. 3, pp. 324–371.

<sup>6</sup> R. Calo, ‘Robots in American Law’, University of Washington School of Law Research Paper no. 2016–04, 2016, p. 3.

has implications for various facets of our society.<sup>7</sup> Some even predict that AI systems can completely eradicate humanity in the long run.<sup>8</sup> There are also several important ethical issues associated with (programming and using) AI systems. The commercialisation of AI will pose several challenges from a legal and regulatory point of view as well.<sup>9</sup>

In this comprehensive book, scholars from various legal disciplines critically examine how AI systems may have an impact on Belgian law. While specific topics of Belgian private and public law are thoroughly addressed, the book also provides a general overview of a number of regulatory and ethical AI evolutions and tendencies in the European Union. The book additionally explains basic AI-related concepts such as machine learning, robots, Internet of Things and expert systems. Therefore, it is a must-read for legal scholars, practitioners and government officials as well as for anyone with an interest in law and technology. As AI influences a wide range of legal areas, a choice of topics had to be made. We decided to base this selection on several criteria. We included topics that already attracted attention in international scholarship and policy documents (e.g. tort law, consumer protection, human rights and data protection). The choice of legal topics covered by this book was further determined by the availability of researchers working on AI-related topics between April and October 2019. Against this background, we decided to include the following chapters.

**Chapter 1** provides a broad overview of AI. After some introductory thoughts on how to define AI, the authors focus on the foundations and main paradigms of AI. The current state of the art for a wide range of applications as well as their expected evolutions are discussed. The chapter ends with a glance at the more distant future and some considerations regarding the ethical and safety aspects of AI.

**Chapter 2** examines which legal rules are most conducive to the emergence of innovation within a market economy. Western legal systems follow the OECD and the World Bank and welcome tax incentives for research and development (R&D) as sound innovation policy. Based on developments in institutional economics, the chapter illustrates that the proposal of tax incentives for innovation encounters significant information problems. Relying on enriched models of what innovation is, the author argues that the best innovation policy lies in supporting secure, stable and general rules of property and contract.

**Chapter 3** provides an overview of the main highlights of the debate on AI ethics and regulation that is currently taking place at various societal levels and

<sup>7</sup> See: Y.N. Harari, *Homo Deus. A Brief History of Tomorrow* (London: Random House, 2016), 528 p.; J. De Bruyne and N. Bouteca, *Artificiële intelligentie en maatschappij* (Turnhout: Gompel&Svacina, 2021), forthcoming.

<sup>8</sup> See: N. Bostrom, *Superintelligence: Paths, Dangers, Strategies* (Oxford: Oxford University Press, 2014), 328 p.

<sup>9</sup> R. Leenes et al., 'Regulatory challenges of robotics: some guidelines', *Law, Innovation and Technology*, 2017, vol. 9, no. 2, p. 2.

in various parts of the world. The chapter hopes to give a glimpse of the direction in which the ethical and legal framework on AI might evolve in the coming years.

**Chapter 4** discusses the advent of AI techniques such as natural language processing and machine learning within the area of dispute resolution, focusing namely on the development and challenges of quantitative legal prediction applications. It examines some existing applications and highlights the advantages that this new development could bring, whilst shedding light on the challenges that quantitative legal prediction poses to the legal system. The author concludes by critically appraising the situation in Belgium.

**Chapter 5** addresses the potential of AI for international arbitration, and, more specifically, the question of whether an AI system could be appointed as an arbitrator. The first part of this chapter goes into the technical (data) requirements which would need to be met in order to develop an AI arbitrator. The second part discusses a number of possible legal obstacles to AI arbitrators. On the basis of the findings of the first two parts, the author goes on to consider how the future of AI-based dispute resolution and arbitration may evolve.

**Chapter 6** addresses the relationship between AI and human rights. It explores how AI systems and applications pose risks and opportunities for human rights. The chapter provides an in-depth analysis of the prohibition of discrimination in an AI-context. The author explores what role human rights can play in fulfilling AI's potential.

**Chapter 7** sheds some light on important questions of international law when dealing with robots. The reader is introduced to basic concepts of international humanitarian law and several *prima facie* concerns regarding their relationship to lethal autonomous weapons (LAWs). The authors then explore the legal aspects of LAWs relating to two themes: the authority awarded to machines in an armed conflict, as well as the processes and procedural safeguards behind targeting and engagement choices. This is followed by a discussion of the current applications of LAWs and their foreseeable developments.

**Chapter 8** discusses AI from a data protection perspective by using smart home assistants (SHAs), such as Amazon Alexa and Google Home, as a case study. SHAs are studied through the lens of the data protection framework and the GDPR in particular. The contribution investigates the obligations of data controllers, the rights of data subjects, the remedies the latter can rely on and the enforcement actions that have already been undertaken in relation to SHAs' data protection issues. Specific attention is devoted to the grounds for lawful processing of data, children as 'invisible' data subjects, and concerns regarding automated decision-making.

**Chapter 9** deals with the interface of AI and intellectual property (IP) law, with a focus on copyright and patent law. First, the protection of AI technology is discussed. Second, attention shifts to the protection of output generated through or by an AI system. In this context, the author thoroughly analyses the

issue of AI authorship and/or inventorship as well as the question of ownership of IP rights associated with AI-generated content.

**Chapter 10** focuses on the tax implications related to AI and robots from a domestic and international perspective. In this respect, the chapter firstly analyses the current tax rules applicable in Belgium in relation to AI and robots and discusses whether there is a general need to implement a robot tax. In addition, it analyses the tax challenges posed by AI and smart robots from an international perspective by using a simplified case study and concludes by providing an overview of the opportunities that AI can create for tax authorities, tax practitioners and corporations.

**Chapter 11** provides an overview of issues regarding robotisation from a labour law perspective. It explains the concept of robotisation and positions it in the broader context of Industry 4.0. It examines the impact of robotisation on employment with special attention for the Belgian labour market and proposes some recommendations in that regard. Finally, it investigates the impact of robotisation on health and safety, responsibility, privacy and discrimination in the workplace.

**Chapter 12** deals with the hypothesis of technological unemployment caused by AI-driven automation and its impact on social security law. This hypothesis is especially relevant for social security systems that either put employment structurally at their centre for determining eligibility or in which employment serves as the legitimation for the rights-based character of social security entitlements. This chapter describes the possible flaws in social security systems that are designed this way when hypothetically confronted with mass technological unemployment.

**Chapter 13** focuses on the use of AI systems in Belgian contract law. In the chapter both standard solutions to deal with a faulty contract are discussed. That is, on the one hand, considering AI as a mere communication tool, or on the other hand, granting the AI system legal personality. The goal of this chapter is to come up with a logical framework that would offer a solution to spread the risk of a faulty contract, due to the AI system, more evenly over both contracting parties.

**Chapter 14** deals with extra-contractual liability for damage caused by AI systems. It examines whether the existing traditional liability regimes in Belgian tort law are adapted to the reality of AI systems and their unique characteristics such as autonomy and opaqueness. The authors analyse fault-based liability, liability for defective things and products, legal personality for AI systems, and also shed light on causation in an AI context.

**Chapter 15** examines the impact of telematics on policy underwriting in vehicle insurance. It provides an analysis of some legal challenges of using telematics in vehicle insurance. The author focuses on the challenges centred

around the underwriting policy technique in vehicle insurance and data protection concerns.

**Chapter 16** focuses on the automation of creditworthiness assessments, and more specifically on credit scoring systems. Although digitalisation and automation within financial services should be encouraged as they may benefit consumer-borrowers, the fact that this method triggers a lot of challenges and potential ramifications for consumers cannot be ignored. This chapter therefore tries to answer the question whether the current (European) regulation is strong enough to withstand this new digital reality facing consumers and to fully protect consumers against negative effects that may go alongside automated credit decisions.

**Chapter 17** analyses consumer law in the era of AI. The author first provides a context for the use of AI in the business to consumer (B2C) context. He then examines the building blocks for an AI consumer policy. Finally, he analyses some of the hurdles AI presents to consumers and how this can be dealt with through consumer law.

**Chapter 18** deals with the use of AI in the healthcare sector. One of the major concerns expressed in literature is the ‘dehumanisation’ of the healthcare sector and the possible negative impact of AI and robotics on the personal relationship between physicians and patients. In this chapter the author nuances this fear of ‘dehumanisation’ of the physician-patient relationship in light of the current legal framework in Belgium.

This book would not have been possible without the help of a number of people. First, we would like to thank all contributing authors for their chapters. Second, we are grateful to all peer reviewers that assessed the different chapters and provided excellent and valuable feedback. Their comments increased the quality of each chapter, as well as the overall scientific value of the book. Third, we would like to express our gratitude to Charlotte De Belie of publishing house Intersentia for her support. Finally, we would like to thank professors Ignace Claeys (UGent, Centrum voor Verbintenissen- en Goederenrecht), Marie-Christine Janssens and Peggy Valcke (KU Leuven, Centre for IT & IP Law), Yves Pouillet (UNamur, CRIDS), and Paul de Hert (VUB, LSTS).

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