

Robotics and its Effects on the Law

Artificial Intelligence is no longer science fiction. Artificial Intelligence, part of computer science, includes in particular machine learning, natural language processing, speech processing, machine vision and robotics. Today, we are closer than ever to developing and producing 'smart' machines (robots) that work with minimal human input. Industry 4.0 is a well-known keyword for the actual transformation of our business world and, moreover, of our society. Artificial intelligence and technologies based thereon offer us a chance for a better life.

Scientific teams located in particular in Europe, China and the US are doing a tremendous job in discovering how deep neural networks in animal brains solve problems of sensory perception, planning and motor control under a plethora of real-world constraints in a most effective and efficient way – a capacity, or rather an algorithm, generally referred to as Deep Learning.

This research is based on a huge amount of neurological data gathered from animals in nature using advanced optogenetic techniques. By classifying and analyzing neurological data, scientists discover natural algorithms evolved under real-world conditions. Based on such discoveries, the scientists turn to their (may be) finest task: the creation of artificial algorithms reflecting their findings; algorithms which can even be the basis of next-generation blockchain technology.

Blockchain is not just a magic word, but a technology essential to the development of trustable protocols of communication and command for robots of the latest generation and of any other products based on Artificial Intelligence. In the not too distant future, we will find on the market all sorts of Artificial Intelligence products automatically generated by the next-generation Deep Learning 2.0 algorithms.

The latest innovation in infrastructure and computer systems based on Artificial Intelligence will be designed to not only be able to support or perform human intelligence tasks (Deep Learning 1.0), but to also be as autonomous and adaptive as animals in performing physical tasks (Deep Learning 2.0). Such design allows robots or similar systems to make decisions independently, to decide how (that is, on what basis) they are going to make such decisions and to learn autonomously (even how to learn) in order to further develop themselves independently.

In the legal environment, this technical evolution might be best illustrated based on the so-called Smart Contracts. Smart Contracts are contracts (in fact, computer protocols) which are generated and, if and to the extent they make use of the latest technology related to Deep Learning 2.0, even executed automatically or rather: autonomously. Hence, the range of possible applications of this technology extends from digital facilitation, verification, and enforcement of contracts as well as mapping and reviewing of contracts all the way to providing technical support for the processing of contracts.

At some point in the not too far future it might be (technically) feasible for a company listed on a stock exchange to have an unlimited number of its shareholders (hence, all of its shareholders) automatically entered into a self-executing shareholders' agreement. This would result in such company and its shareholders being subject to a set of individual rules, tailored to any applicable contract law and that company's and shareholders' (investors') needs, in particular reflecting from time to time that company's social, economic and legal environment and its business prospects.

As we go along, chunky company law, too cumbersome to adapt to a more and more rapidly changing world, might to a vast extent lose its traditionally high influence in the business area.

What other legal queries need to be dealt with and what legal challenges will be faced with regard to the increasing importance of Artificial Technology, Blockchain and the latest technology relating thereto?

An example: (Health-)Care robots and their legal challenges

The global trend of transitioning into aging societies has created an irreversible labour shortage in industries and thus fueled the market demand of (Health-)Care robots, which are developed to assist elderly people or people who are recovering from injuries with their daily tasks in their own homes.

Care robots can provide physical assistance or serve as a memory aid. We have done some thinking on the legal questions that might become relevant when robots are used in the healthcare sector.

Liability

The key question here is: Can responsibility for loss or damage caused by the robot be attributed to someone? What types of liabilities might be at issue? Loss or damage could be caused by a defect of the robot or by an operating error on the part of the user. The contractual claims in the event of a defect of the product would be governed by the contractual law regarding the sale and purchase. Claims for liability could be asserted through product liability. As already mentioned, robots are programmed by the latest technology (DL 2.0) in such a way that they are able to learn autonomously (even how to learn). So at which point may the manufacturer argue that he can no longer be responsible for the robot's actions or omissions?

What happens when someone gets injured by a robot? Which party would be liable for compensating the injured person: The manufacturer of the robot, the designers? The party that provided the robot to the user? Is it even possible to find out whether an accident or a damage was caused by the user's own actions, or whether it was caused by the robot's (mis-)understanding of the user's intention? How can we apply existing liability schemes to robots? Is there a need for new liability rules?

Crime

Who will be criminally liable if a care robot injures or even kills a patient? So far, criminal behavior has been attributed to the owner or holder of a machine. Is it possible to attribute the behavior to the user? If in the future the robot should face criminal sanctions, what would they be? Re-programming? Scrapping?

Could Insurance be a Solution?

Another question addresses the issue whether a robot that is capable of learning and making its own decisions can be insured against damage caused to patients. Which categories of robots could be insured? What would the insurance obligation look like? Which cases would be covered by the insurance? It is also questionable whether and under what conditions insurance companies would accept such unforeseeable and uncontrollable risks for robots.

Data Protection

What are the key data protection issues? The use of autonomous machines could also touch on data protection issues, especially with respect to loss of privacy and/or abuse of access. Care robots that dispense medication and measure blood pressure or heart beats would be technically easy to implement already today. Such robots need to be fed with huge amounts of patient data. How can today's stringent data protection regulations nevertheless be complied with, bearing in mind that the robot's operator needs to have access to such data?

Robots are equipped with sensors that can record and store all data, and thanks to networking may even be able to place them on the Internet. Such collection of data presents a heavy risk of violating existing data protection regulations. Such regulations require that the storage, transmission and evaluation of data meet strict requirements. Therefore, a balance must be struck between deriving maximum benefit from these large datasets and ensuring a good level of compliance with data protection regulations. The ideal solution that could be possibly offered by Deep Learning 2.0 is a real-time decentralized data processing pipeline that does not need to collect or store any data in a centralized cloud.

Hurdles are also provided for in the data protection ordinance of the EU as its Art. 22 states that “[t]he data subject shall have the right not to be subject to a decision based solely on automated processing, including profiling, which produces legal effects concerning him or her or similarly significantly affects him or her”.

Further key issues from a legal perspective to be taken care of:

- How does Artificial Intelligence impact upon a business’s intellectual property (IP) rights and such business’ strategy related thereto?
- Might Artificial Intelligence even cause competition (antitrust) law issues?
- Indeed, Artificial Intelligence, robotics and Blockchain will heavily affect our legal world.
- A vast number of new legal queries will emerge and need to be solved.
- In particular, any business involved by any means in Artificial Intelligence and blockchain technology will have to assess the legal risks related to such activities.
- We are ready to shape the legal future together with you. A future that needs to respond, and that will respond, to the new legal challenges raised by this technical evolution.

Challenge us!

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