

Position Paper: Ethical, Legal and Socio-economic Issues in Robotics

euRobotics topics group on 'ethical, legal and socio-economic issues' (ELS)

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This position paper briefly summarises how leading European experts in the field see the main issues and what their analysis is – on one page each for ethical, legal and socio-economic matters. The 'ethical, legal and socio-economic issues' (ELS) topics group is part of euRobotics, the European Association for Robotics, combining academia and industry. While most of this paper has been discussed in the topics group, it should not be assumed that all 74 members agree with everything said here. – This version 1 is presented in 3 workshops at the European Robotics Forum 2017: <http://www.pt-ai.org/TG-ELS/page-3>

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1. Ethical Issues

1.1. Problems

Rapid developments in robotics have the potential of undermining *human values*, esp. moral responsibility (“the robot did it!”), compassion, and human dignity. Robots may also undermine certain distinctions that we are fond of, e.g. human and non-human, and they may deceive humans.

Many ethical problems concern possible *negative consequences* on the well-being of humans (and other sentient beings). This includes safety at the workplace, dehumanisation of certain environments (such as health-care), and easier killing of humans in war. – Here the question is: Are the benefits of robots worth the risks?

More autonomous robots may lead to less human control, and in the long run they may lead to a situation that is not beneficial to humankind. Some of the economic results of robot use in automation are also seen as ethical problems, e.g. changes in labour conditions, loss of jobs or a more uneven distribution of wealth (cf. section 3).

1.2. Analysis

Generally, any person is ethically *responsible for their actions*, and this also applies when they are involved in the design, production, sale or use of a robot. Ethically judging of the person’s action will involve two criteria: (a) did the person act *ethically right* and, to a lesser extent, (b) did the action have *positive consequences*?

On the question of *values* (a), we judge a person by ethical characteristics (‘virtues’), such as honesty or fairness; and by whether they follow a universal rule that we could want anyone to follow, without making an exception for ourselves (I. Kant) [virtue & deontology]. One expression is the golden rule: “Do to others what you would want them to do to you”. On the question of *consequences* (b), people should behave in such a way as to maximise the probability of good consequences for society overall, and in the long run, i.e. not just their own interest or for the short term [consequentialism].

The two demands to (a) act ethically right and (b) produce good consequences are often in conflict and sometimes we say that overwhelmingly important consequences trump the value considerations. Thus, the end does not justify the means, but neither should we always just follow the ethical rules.

So, the beginning of ‘policy’ for robotics is that agents have to *act ethically right and maximise good consequences*. The main value issues seem to concern honesty, esp. non-deception of users and customers. Also, we need to retain the principle that humans are responsible for their actions, while robots and other machines are not. The main policy concerns are of consequences and risk, so the right action is to evaluate such consequences and analyse which course of action likely produces the most benefit. In this analysis, it is currently disputed, for example, whether robots in care or military robots maximise good consequences.

There is agreement that autonomous and highly intelligent robots could, in principle, constitute an existential threat to humankind, but this is usually seen as a theoretical or very long-term possibility only.

2. Legal Issues

2.1. Problems

Discussing the adequacy of existing regulation in accommodating new technologies is necessary, but the ontological approach is incorrect. Instead a functional approach needs to be adopted, identifying: (i) what rules can be applied to robots (as is); (ii) what incentives do such rules provide; (iii) whether those incentives are desirable.

The term “robot” is a-technical and encompasses a wide range of applications that have very little in common. The major issue when discussing civil law rules on robotics is that of *liability* (for damages). Automation might challenge some of the existing paradigms, and increasing *human-machine cooperation* might cause different sets of existing rules to overlap. Among more specific kinds of applications, biorobotic devices and *human enhancement* are critical. Finally, *privacy regulation* is of pivotal importance.

2.2. Analysis

The recent Resolution of the European Parliament [16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics (2015/2013)] provides an adequate framework for a technical – legal – debate about what narrow tailored sets of rules should be adopted at the EU level. More specifically:

Definitions: there is need for a definition of robot that is inclusive. Debates about whether a robot requires to be autonomous or not, controlled or not, embodied or not are irrelevant from a legal point of view.

Liability: Human-machine cooperation will cause product liability rules and traditional tort law principles to overlap. This will cause high levels of uncertainty and litigation, delaying innovation. The inadequacies of existing rules suggests to *radically replace a fault based rule with a risk-management approach* (based on absolute liability rules), holding liable the party who is better placed to minimize the cost and acquire insurance.

Standardization: standards represent the most effective way to ensure high levels of product safety and provide certainty *ex ante* to manufacturers who conform to them.

Electronic Personhood: as set forth by the Resolution, this notion is purely functional and intends to facilitate the registration, insurance and management of some devices (in particular non- embodied AI) with a legal tool that is equivalent to that used for corporations (so called legal personhood), see Resolution n. 59, let. E) and F).

Human Enhancement: there is lack of a clear sets of criteria that could help discern what kind of manipulations of the human body should be allowed. The legal grounds to justify an intervention by the EU in this field are less evident than in all other matters mentioned, but can be based on the notion of human dignity.

Privacy & Free Flow of Data: privacy cannot be granted simply through informed consent. Consent is hardly ever truly informed, and the very possibility to dissent is limited. The current EU Regulation (2016/679 of the European Parliament) setting forth the “-by design” principle, should be narrowed down through the adoption of specific standards.

3. Socio-economic Issues

Usage of robots in the workplace is increasing, and applications are occurring across a wide range of tasks in agriculture, manufacturing, cleaning, health care, and more. Meanwhile, further innovations are improving robots' capabilities across new tasks, as well as increasing efficiency and reducing costs in known applications.

These developments have raised popular concern that robots are increasingly competing for jobs against humans: Eurobarometer data show 73% of Europeans are indeed concerned that robots steal people's jobs. It has even been argued that up to 47% of jobs can be automated within the next 20 years, suggesting the possibility of mass technological unemployment.

However, these warnings disclose neither an understanding of robotics in the different applications nor an insight into the functioning of labor markets. Technological progress has been around since the First Industrial Revolution in the 19th Century, and the consensus among labour economists is that this has not caused a long-run increase in unemployment. This is because technology allows us to produce new and cheaper goods and services, creating economic growth and more jobs (both in existing sectors and in new ones) in the process.

The Digital Revolution is expected to have much the same long-run economic impact, creating more and better jobs because it complements rather than replaces workers in doing mentally as well as physically demanding tasks. Also, new technologies can perform many tasks for which there is a lack of workers willing to do these tasks of for which we think human labor should be used scarcely.

However, there will be adjustment costs because the composition of employment is changing. This adjustment means individual workers do lose their jobs and see their skills become obsolete, even if new opportunities arise elsewhere. Furthermore, new technologies lead to changes in the organization of work, demanding more flexible work practices, regular on-the-job training, and more decentralized decision-making.

These adjustments are governed by a range of factors:

- The average new technology takes between 15 to 30 years to go from 10% to 90% adoption. This relatively slow diffusion is largely due to the decisions of entrepreneurs, and related to gradual improvements in new technologies' effectiveness and a reduction in their costs.
- Legal and institutional factors also influence this adjustment process. Skill supply is to a large extent determined by the education and training system with more skilled workers being more flexible in adapting to new technologies. Institutional safety nets are crucial in softening any transitions between jobs. There are legal and ethical issues concerning technology usage, and 94% of Europeans agree that robots are a form of technology that requires careful management.
- Public opinion on robotics matter for influencing the legal and institutional framework. Currently, 75% of Europeans claim having a mostly positive view of robots, and 44% think widespread use of robots can boost job opportunities across the EU. Positive attitudes are more frequent among the young and those who have experience with robots in their workplace or at home.

4. Sources/References

The main literature source for robot ethics is <https://philpapers.org/browse/robot-ethics>. See there for introductory texts. See also the policy documents on <http://www.pt-ai.org/TG-ELS/policy>

- RoboLaw - Guidelines on Regulating Robotics (09/2014) and developments http://www.robolaw.eu/RoboLaw_files/documents/robolaw_d6.2_guidelinesregulatingrobotics_20140922.pdf

- RockEU report on “regulation in robotics” (August 2016) https://www.researchgate.net/publication/308416306_ELS_issues_in_robotics_and_steps_to_consider_them_Part_2_Robotics_and_Regulations

- <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+REPORT+A8-2017-0005+0+DOC+XML+V0//EN> - REPORT with recommendations to the Commission on Civil Law Rules on Robotics. 27 January 2017, A8-0005/2017