



Inclusive Robotics and AI – Some Urgent Ethical and Societal Issues

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1 Introduction: What Do We Mean by Inclusive Robotics?

Many discussions about robotics and Artificial Intelligence (AI) focus on far future scenarios such as superintelligence. This is understandable since fear of machines taken over is part of our culture. However, for the near future ethics of robotics AI it is necessary to think about more concrete ethical issues that pervade the daily use of robotics, AI, and AI-related technologies.

In this talk I will focus on robotics linked with AI and give a very brief overview of ethical and societal issues, with a focus on inclusive robotics. I will end with some general remarks on robot and AI policy.

But before we start, what does “inclusive” mean when applied to robotics and AI? The term can refer to process or product. Process means that research and innovation process: is that process inclusive? The term can also refer to product: the robotic system and its ethical and societal consequences. Is the product inclusive with regard to users and its stakeholders? It is good to keep in mind this distinction and these questions in the discussions about ethics of AI.

2 Ethical Issues Raised by Robotics Linked with AI

Some ethical issues raised by robotics and AI are similar to issues raised by digital technologies in general. Think about privacy and data protection, security, safety, and the impact of the technology on vulnerable users. There are, however, some issues specific to AI.

First, as an automation technology, robotics and AI raise issues concerning responsibility attribution. If it gets more agency, how can we assure that responsibility can be ascribed? Who is responsible, for instance, when a self-driving car causes an accident? This is not only a philosophical issue but also a very practical and legal one. Since machines cannot be responsible on any definition of responsibility, one could

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argue that responsibility needs to stay with humans. However, given the problem of many hands (and many things – there are many technologies related to robots and AI, it's not just one artefact), it is difficult to ascribe responsibility. Inclusive robotics and AI means here that responsibility can be ascribed for the consequences of robotics and AI for all kinds of stakeholders, including those that may be excluded by the decisions and actions recommended or taken by the robot or AI.

Second, when robotics is based on AI, there is the problem of transparency. Some AI applications, in particular deep learning applications, present the problem that one cannot (easily) explain the decision or action of an AI. This is an ethical problem since it makes it difficult to be responsible in the sense that users of the system might not be able to explain to other people affected by the decision or action why the decision or action was taken. Inclusive robotics and AI means here to make sure that decisions or actions recommended or taken by the robot can be explained to people – ALL people involved and affected by the technology.

Third, an important issue with regard to inclusive robotics is that robotic systems linked with AI can incur unjust bias, which means that specific individuals or groups are disadvantaged. Inclusive robotics and AI here means that the datasets used by the robotic/AI system do not contain or implicate unjust bias. It is important that the technological system supports an inclusive society. What this means concretely depends on one's political(-philosophical) views about what a just and fair society is. What we mean by inclusive robotics and AI is not only a technical or legal matter, but requires political and philosophical discussion.

3 Policy on Robotics and AI

Currently there are many policy documents that contain ethical guidelines on robotics and AI. It is important that they pay attention to inclusiveness in all its senses.

In general, with regard to policy on inclusive robotics and AI it is important to be pro-active: do not wait until the technology is developed but embed ethics in the design and development of the technologies. We also need to ensure that there is responsible innovation in this area: take into account all stakeholders in the process. This, too, is inclusive robotics.

Finally, we need policy on education, in order to ensure that understanding between disciplines and professions is enhanced, including between humanities and engineering. The future of ethical robotics and AI will depend on whether we can make this pro-active ethics, inclusive innovation, and interdisciplinary education work in practice.