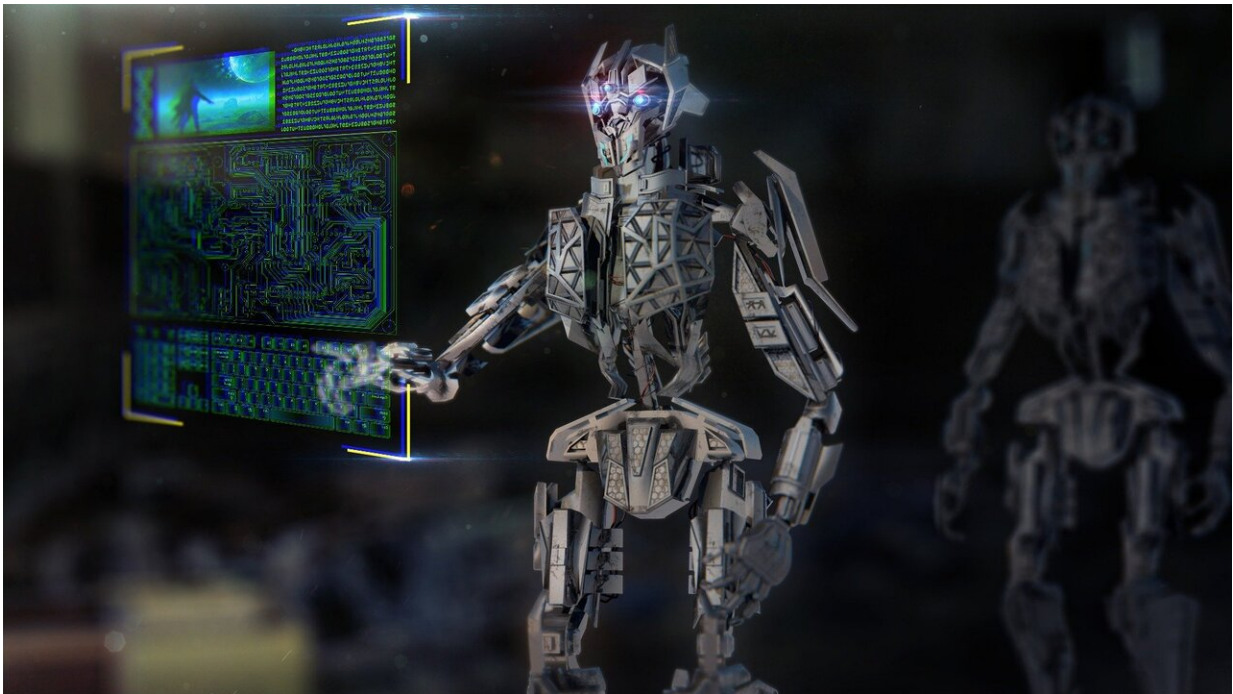


# Q&A: The embedded ethics approach in AI development

September 1 2020, by Christine Lehner

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The increasing use of AI (artificial intelligence) in the development of new medical technologies demands greater attention to ethical aspects. An interdisciplinary team at the Technical University of Munich (TUM) advocates the integration of ethics from the very beginning of the development process of new technologies. Alena Buyx, professor of ethics in medicine and health technologies, explains the embedded ethics

approach.

The discussions surrounding a greater emphasis on ethics in AI research have greatly intensified in recent years, to the point that one might speak of "ethics hype," and many committees in Germany and around the world such as the German Ethics Council or the EU Commission High-Level Expert Group on Artificial Intelligence have responded. They are all in agreement: More ethics are required in the development of AI-based health technologies.

But how do things look in practice for engineers and designers? Concrete solutions are still few and far between. In a joint pilot project with two Integrative Research Centers at TUM, the Munich School of Robotics and Machine Intelligence (MSRM) with its director, Prof. Sami Haddadin, and the Munich Center for Technology in Society (MCTS), with Prof. Ruth Müller, researchers want to try out the embedded ethics approach, and published their proposal in *Nature Machine Intelligence* at the end of July.

## **What exactly is meant by the embedded ethics approach?**

The idea is to make ethics an integral part of the research process by integrating ethicists into the AI development team from day one. For example, they attend team meetings on a regular basis and create a sort of "ethical awareness" for certain issues. They also raise and analyze specific ethical and social issues.



Alena Buyx, Professor of Ethics in Medicine and Health Technologies, advocates the "embedded ethics approach" in the development process of new AI health technologies. Credit: Juli Eberle/TUM

### **Is there an example of this concept in practice?**

The Geriatrics Research Center, a flagship project of the MSRM in Garmisch-Partenkirchen, is developing robot assistants to enable people to live independently in old age. The center's initiatives will include the construction of model apartments designed to try out residential concepts where seniors share their living space with robots. At a joint meeting with the participating engineers, it was noted that the idea of using an open concept layout everywhere in the units—with few doors or individual rooms—would give the robots considerable range of motion. With the seniors, however, this living concept could prove upsetting because they are used to having private spaces. At the outset, the engineers had not given explicit consideration to this aspect.

**The approach sounds promising. But how can we**

## **avoid embedded ethics from turning into an ethics washing exercise, offering companies a comforting sense of being on the safe side when developing new AI technologies?**

That's not something we can be certain of avoiding. The key is mutual openness and a willingness to listen, with the goal of finding a common language—and subsequently being prepared to effectively implement the ethical aspects. At TUM we are ideally positioned to achieve this. Prof. Sami Haddadin, the director of the MSRM, is also a member of the EU High-Level Group of Artificial Intelligence. In his research, he is guided by the concept of human centered engineering. Consequently, he has supported the idea of embedded ethics from the very beginning. But one thing is certain: Embedded ethics alone will not suddenly make AI "turn ethical." Ultimately, that will require laws, codes of conduct and possibly state incentives.

**More information:** Stuart McLennan et al. An embedded ethics approach for AI development, *Nature Machine Intelligence* (2020). [DOI: 10.1038/s42256-020-0214-1](https://doi.org/10.1038/s42256-020-0214-1)

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