

## Submissions Abstract Book - All Papers (Included Submissions)

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Telling Stories About Artificial Intelligence and Robots in Higher Education

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**Research Domain:** Digital University and new learning technologies (DU)

**Abstract:** In the next decade Artificial Intelligence (AI) and robots will affect Higher Education indirectly through the need to train a new workforce to work with them, but also directly through applications to learning, research and administration. The paper offers a review of these changes. But rather than framing this as about technologies, it suggests that it is more productive to see current narratives about AI and robots as social imaginaries with a long history. In this context writing alternative stories about the potential impact of AI and robots on lives in learning becomes relevant. The paper explains the process of creating and evaluating a collection of such alternative fictions. The paper argues that such fictions are a valid output from research on Higher Education.

**Paper:** The last five years has witnessed a wave of excitement and hype about the potential of AI and robots to transform many aspects of our lives: to perhaps even trigger a Fourth Industrial Revolution. There has been a wave of fear too about this prospect, revolving around biased algorithms, threats to privacy and freedom of expression, and the potential impact on human agency and work. Jobin et al. (2019) identified no less than 84 different statements about AI ethics from international agencies, national governments, professional bodies and tech firms, but concluded that there was a lack of real consensus about ethical principles and how to apply them. Many voices are not being heard in the debate e.g. such as those from global souths.

For good and ill, inevitably these changes will impact Higher Education indirectly via the need to train students with data science skills and an understanding of responsible development and on-going use. These should not be the concern only of computer science departments or even management schools.

Furthermore, there will also be direct uses of these technologies in HE. There is a well-established literature around AIED, including the study of technologies such as adaptive learning systems, chatbots, and automatic writing assessment. These do potentially offer exciting possibilities of adaptivity, scalable student support and even new ways of learning (Luckin, et al. 2016; Holmes et al., 2019). Furthermore, AI and robots are likely to have significant impacts on HE research and administration. Robot scientists are already being used to conduct huge numbers of experiments in

an automated way; machine learning is being used to mine both the published literature and different forms of data for research purposes; AI is even itself writing academic texts (Jones et al. 2019). There is also a discrete literature on the smart campus and increasing use of forms of AI in student administration.

However, a recent review acknowledged that the AIED literature is mostly written by computer scientists who are developing systems and tends to neglect both ethical and pedagogic issues (Zawacki-Richter et al, 2019). Blanchard (2015) acknowledges the WEIRD bias in AIED literature. Wider societal concerns about datafication are being reflected in the HE literature too. Perhaps equally important, there are implementation challenges in a sector not really known for rapid technology adoption (Tsai et al., 2019).

As with any debate about learning, the framing of this debate is critical. It is quite possible to frame AI and robots terms in terms of technologies such as machine learning, computer vision and natural language processing. But we should equally recognize that the delivery of mass consumer AI is based on an industrial complex with huge sustainability challenges in terms of its use of energy, raw materials and often low paid labour (Crawford and Joler, 2018).

This paper suggests that a productive approach is to recognize that AI and robots are social imaginaries about how human minds and bodies might be extended or replaced by machines. These are ideas with a long history: albeit, the story shifts about which technologies are likely to offer the artificial element (as well as about what “intelligence” is).

Framing them essentially as stories is realistic and empowering. Science fiction is recognized to have influenced the actual development of AI and robots. In the same way the “fictions” offered by EdTech companies and governments also feed into this story. In this context, we need narratives to trouble both technological solutionist narratives and their dystopian mirror images.

The research reported in this paper uses fiction to ask questions about the future of HE with AI and robots. These fictions invite those working in HE to imaginatively engage with possible futures in learning, research and administration, and promote our ability to influence the choices our institutions make. The paper will argue that fiction is a valid output for HE research, because of its ability to allow us to imagine future worlds concretely and ask critical questions about technology futures in an engaging way. The paper explains how a collection of inter-related fictions were produced within a design fiction methodology (Blythe, 2017) and summarises work undertaken with colleagues to evaluate them. Following Leavy (2016) the paper will argue that fiction is a valid output from research in education.

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