



## Can I trust my Android?

Machines need to be taught to behave ethically in the fourth industrial revolution.

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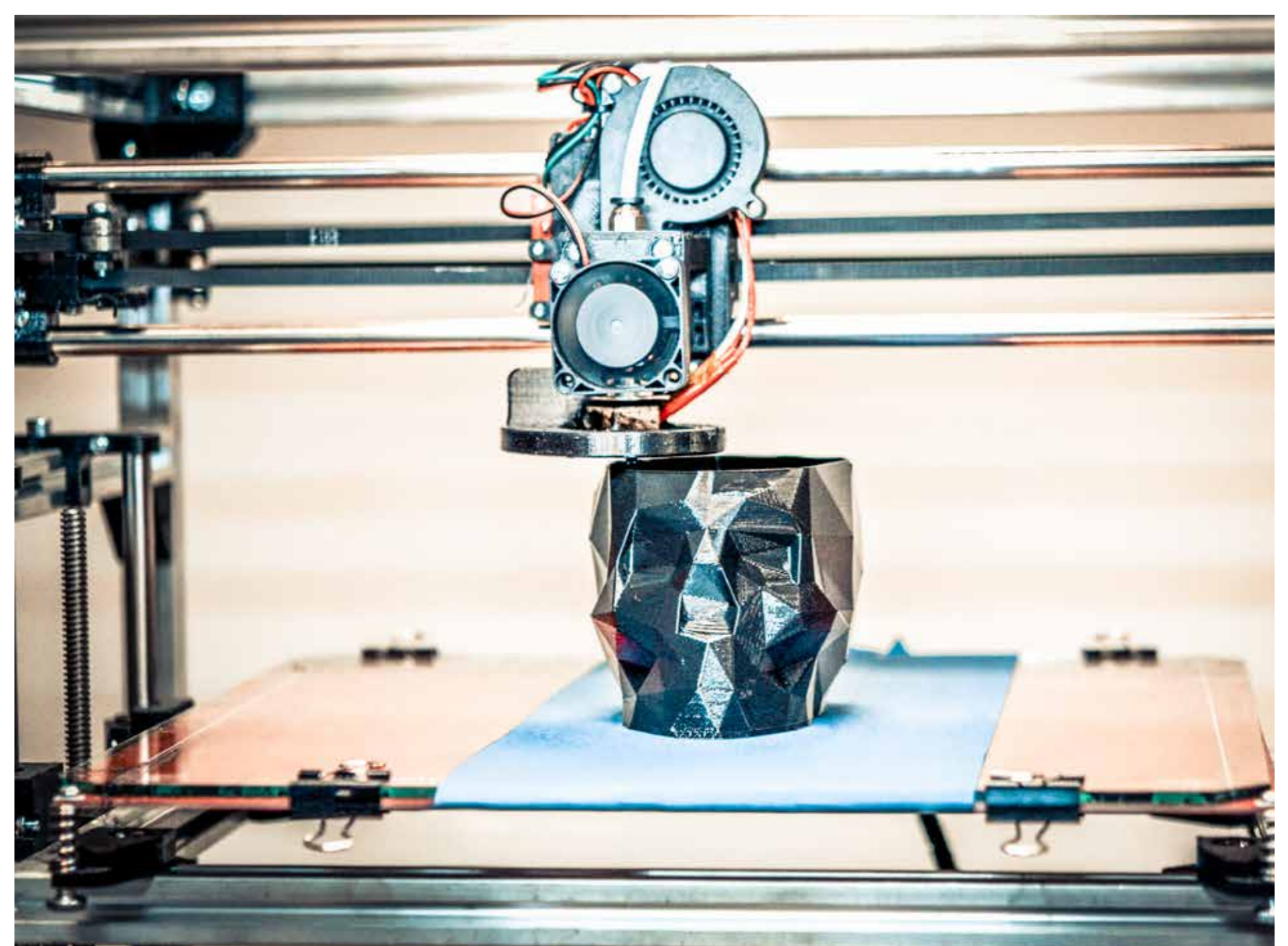
<https://www.seekdl.org/conferences/paper/details/10121.html>

During the fourth industrial revolution (4IR), it is expected that machines will work closely with humans and take over certain repetitive jobs. Two fears arise from this. The first is concerned with computers that run out of control and become malicious. The second fear is: "Will they eventually take over my job?"

Software systems are known to experience challenges - things just don't work the way they are supposed to. Often, they are simply performing incorrectly and produce incorrect results, like when your automated car hits the pavement while you are parallel parking. At other times, the software is trying too hard - like when your car tells you that you should not be at a certain place because you never go there.

It is essential that computer systems function as expected, especially safety-critical systems that have human lives at stake. Using mathematical techniques to produce reliable software can limit problems and create highly dependable systems.

"This is the use of so-called



*Computers could be taught to behave as expected, using mathematical techniques.*

formal methods (FMs), whereby the behaviour and consequences of a system can be predicted and illustrated to users," says Professor André van der Poll.

FMs could, for instance, assist in embedding safe, ethical principles into the algorithms of your Android colleague, preventing malicious behaviour.

"When it comes to losing your job to a sophisticated machine, it is comforting to remember that throughout history, automation has created many more job opportunities than the number of those that were lost. However, you need to be willing to learn new skills to function in such a brave new world."



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