

opinion

By Johan Fourie



AUTOMATION

The future of work: Don't fear robots, rather embrace them

Automation has become a threat to traditional jobs in almost every industry. But learning how to tap the benefits of robots could be to your advantage.

Being an economist at a university means parents inevitably think you have a lot of insight into the future of the job market. What is the "safest" programme, parents typically ask, that will guarantee Ryan or Simphiwe a well-paying job at the end of their degree? Translated: How do I maximise the return on my investment?

As with any investment, there are risks. Not all university students graduate; a recent study on higher education pass-through rates – by Stellenbosch University's Research in Social and Economic Policy (ReSEP) unit – shows that less than 40% of South African students attain their degree within four years of starting (most degrees are three-year programmes).

Only 58% of students complete their degree within six years. (The numbers are particularly low at Unisa, a distance-learning university, where only 28% of students complete within six years.) There is a good chance Ryan never completes his degree, leaving only debt, psychological scars and forgone income in the labour market behind. The researchers also find that, while matric marks are strongly correlated with access to university, they matter less for university success. Simphiwe may have been a bright spark in school, but that is no guarantee that she will be successful at university.

But parents are not so much worried about the internal factors that lead to the success of their investment (like Ryan attending class, one of the most important determinants of success), than about external threats that may affect his chances of finding a job. The biggest culprit nowadays: robots.

The threat of robots is everywhere, it seems. Autonomous vehicles will soon substitute the most ubiquitous job of the 20th century – taxi and truck drivers. Blue-collar jobs are first in the firing line, from farm labourers replaced by GPS-coordinated harvesters to postal workers replaced by, well, e-mail. But white-collar work – often the domain of university graduates – will soon follow: lawyers, accountants, and middle management, to name a few. Basically any job with repetitive tasks run the risk of robotification.

Parents want to know which job types are most likely to succumb to the robot overlords. If lawyers are of no use in the future, why study law? This is a reasonable concern. Several of the standard activities undertaken by lawyers are repetitive, easily automatable. And artificial intelligence challenges even non-repetitive work: it allows software to search through large volumes of legal texts at a fraction of the time a paralegal would during the "discovery" phase of a case.

Not so fast, says Tim Bessen, an economist at the Boston University School of Law. He shows that, in the period that this software has

spread through the US, the number of paralegals has increased by 1.1% per year. Because the costs of undertaking these "discovery" services have fallen dramatically as a result of the new technology, the frequency of such services has increased, requiring more paralegals, not fewer.

Not only can robots substitute existing repetitive work; they can do it so much better! Although robots and their algorithms are not entirely objective – algorithms adjust to human behaviour, often reinforcing our prejudices – their biases tend to be more transparent and corrigible. A new NBER study shows just how robots could transform one of the oldest human professions – the judge – and in so doing realise huge societal benefits. The five authors, three computer scientists and two economists, want to know the following: can US judges' decisions be improved by using a machine learning algorithm?

Every year, more than 10m Americans are arrested. Soon after someone is arrested, a judge must decide where the defendant will await trial – at home or in jail. By law, judges should base their decision on the probability of the defendant fleeing or committing another crime. Whether the defendant is guilty or not should not influence this decision.

To investigate whether judges make fair decisions, the authors train a face recognition algorithm on a dataset of 758 027 defendants in New York City. They have detailed information about these defendants: whether they were released, whether they committed new crimes, etc. They then construct an algorithm to process the same information a judge would have at their disposal, and the algorithm then provides a prediction of the crime risk associated with each defendant.

Comparing their results to those of the judges, they find that an algorithm can have large welfare gains: a "policy simulation shows crime can be reduced by up to 24.8% with no change in jailing rates, or jail populations can be reduced by 42.0% with no increase in crime rates". All categories of crime, including violent crimes, decline. The percentage of African-Americans and Hispanics in jail also falls significantly.

Will robots replace judges? Probably not. But the quality of judges' decisions can be improved significantly by using robots. This will be true in most other skilled professions too, from law to management to academic economists like me.

Matriculants on the cusp of their careers (and their anxious investor parents) have no reason to fear the coming of the robots. If Ryan and Simphiwe, regardless of their field of study, see them as complements – by learning their language and how to collaborate with them – the benefits, for themselves and society at large, will be greater than the costs. ■

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