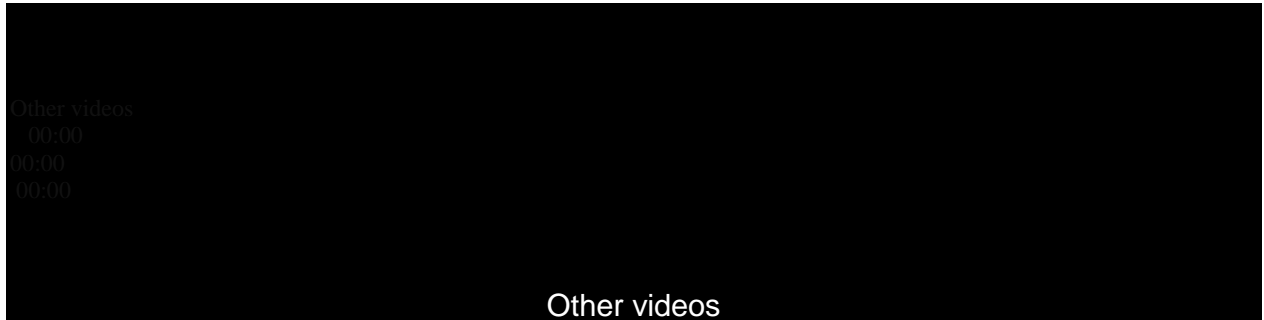


Artificial intelligence and automation are coming, so what will we all do for work?

Lateline

By Margot O'Neill

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Video: Robots are predicted to reach human intelligence levels by 2029. (Lateline)

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What does the worldwide head of research at Google tell his kids about how to prepare for the future of work with artificial intelligence?

"I tell them ... wherever they will be working in 20 years probably doesn't exist now," Peter Norvig says. "No sense training for it today."

Be flexible, he says, "and have an ability to learn new things".

Future of work experts (yes, it's a thing now) and AI scientists who spoke to Lateline variously described a future in which there were fewer full-time, traditional jobs requiring one skill set; fewer routine administrative tasks; fewer repetitive manual tasks; and more jobs working for and with "thinking" machines.

GET READY FOR THE AI RACE



From truckies to lawyers and doctors, artificial intelligence will change every job and profession. Read all of Lateline's coverage of the AI race.

From chief executives to cleaners, "everyone will do their job differently working with machines over the next 20 years," Andrew Charlton, economist and director of AlphaBeta, says.

But experts are split on whether this technological transformation will create more jobs than it destroys, which has been the case historically.

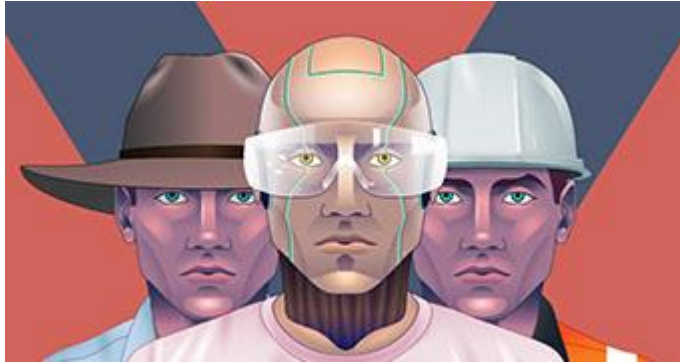
"Copying [AI computer] code takes almost no time and cost. Anyone who says they know that more jobs will be created than destroyed is fooling themselves and fooling us. Nobody knows that," says University of New South Wales professor of AI Toby Walsh.

"The one thing we do know is the jobs that will be created will require different skills than the jobs that will be destroyed. And it will require us to constantly be educating ourselves to keep ahead of the machines."

SHOULD WE ALL LEARN TO CODE?

Yes, says Hamilton Calder, acting chief executive of the Committee for Economic Development Australia (CEDA). "Coding will need to be ubiquitous within the workforce and taught at all levels of the education system."

COULD A ROBOT DO YOUR JOB?



[Search our database of every Australian occupation to find out how difficult it will be for artificial intelligence to do your job.](#)

No, says Mr Charlton. "I think the big misconception here is that in order to be successful in the future economy you need to be competing with machines [and] become a coder, a software engineer. That's quite wrong."

Not everyone needs to code because ultimately AI programs will likely be better coders than humans, says Professor Walsh. But "if you're a geek like myself, there is a good future in inventing the future".

A "broad, basic education with a strong STEM focus (science, technology, engineering, mathematics) will provide the core skills and flexibility that people will need," says PWC chief economist Jeremy Thorpe, "given they will likely change jobs or careers much more than previously".

SAY GOODBYE TO THAT 'DREAM' JOB

Seventeen jobs and five careers — it is exhausting just thinking about it. But that is the prediction for school-leavers, according to research done for the Foundation for Young Australians (FYA).

"We should stop encouraging young people to think about a 'dream' job," Jan Owen, CEO of FYA, says.

"It's important not to focus on individual jobs ... rather they should aim to develop a skill set that is transferrable [including] financial and digital literacy, collaboration, project management and the ability to critically assess and analyse information."

SAY HELLO TO YOUR ROBOT PARTNER

Play (2.1 MB)

GIF: Nao, a robot developed by French robotics company Aldebaran

Future work will fall into one of three categories, says Robert Hillard, managing partner, Deloitte Consulting.

"Firstly, people who work for machines such as drivers, online store pickers and some health professionals who are working to a schedule," Mr Hillard says.

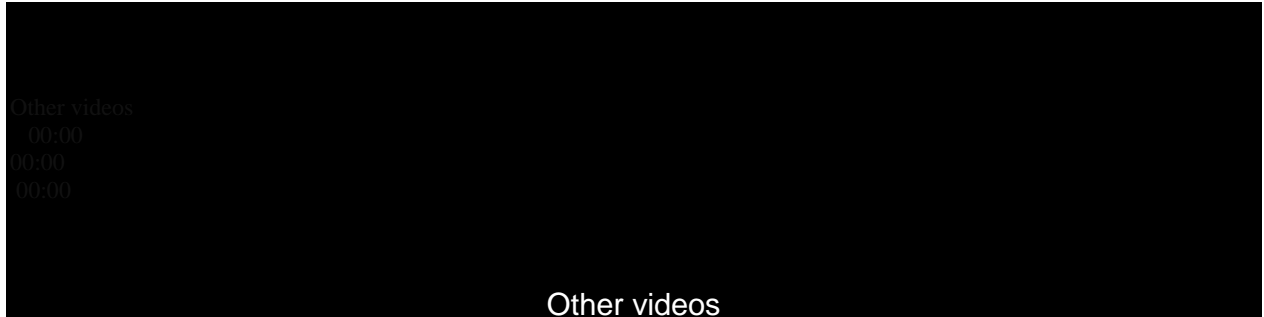
"Secondly, people who work with machines such as surgeons using machines to help with diagnosis, and thirdly, people who work on the machines, such as programmers and designers."

Human-machine teams will combine the lightning-fast speed and accuracy of AI algorithms with instinctive human skills such as intuition, judgment and emotional intelligence, according to a report by the US based Institute for the Future.

Mr Hillard says AI's ability "is to answer a unique question by synthesizing the answers to thousands or millions of related but different questions".

"What AI can't do is design new questions and that's the skill that will make people most competitive: helping their customer or employer find the right question to ask."

While he expects the number of jobs to increase, the danger is they may not be better jobs. Those working for machines will experience the most disruption.



Video: [Professor Rob Sparrow and Professor Ron Arkin weigh in on AI and its implications \(Lateline\)](#)

BEING HUMAN IS NOW A SKILL

There is one skill we already have that can increasingly be leveraged for income: being human.

"We don't make computers that have a lot of emotional intelligence," Professor Walsh says. "[But] we like interacting with people.

JOBS OF THE FUTURE

- Bringing up AI and robots: Algorithm trainers include the growing army of so-called "click workers" who help algorithms learn to recognise images or analyse sentiment, for instance.
- Computational philosopher: To ensure human-aligned ethics are embedded in AI algorithms
- Robot personality designer
- Robot obedience trainer
- Autonomous vehicle infrastructure designer: New road and traffic signs to be read by computers

"We are social people, so the jobs that require lots of emotional intelligence — being a nurse, marketing jobs, being a psychologist, any job that involves interacting with people — those will be the safe jobs. We want to interact with people, not robots."

Futurist Ross Dawson gives an example of how this could be turned into a new kind of job.

"Perhaps it is a productive role in society to interact, to have conversations [with other people] and then we can remunerate that and make it a part of people's lives," he says.

Mr Charlton says: "Most of the opportunities are to do things that machines can't do, things that humans do well in the caring economy — to be empathetic, to work in a range of occupations which require interpersonal skills."

China's most successful tech venture capitalist and former Google and Microsoft executive Kai-Fu Lee recently wrote in The New York Times that traditionally unpaid volunteering roles could become future "service jobs of love".

"Examples include accompanying an older person to visit a doctor, mentoring at an orphanage, serving as a sponsor at Alcoholics Anonymous — or, potentially soon, Virtual Reality Anonymous."

Jobs growth is already strong in the caring economy with unmet demand in child care, aged care, health care and education — although many of those jobs are poorly paid.

"The challenge is to recognize that those jobs should be paid well. It's a choice for us as a society, community and government to value those types of human jobs well," Mr Charlton says.

FIND YOUR INNER ARTIST

Computers are not imaginative or very creative.

"We have one of the most creative brains out there," Professor Walsh says.

So, ironically, "one of the oldest jobs on the planet, being a carpenter or an artisan, we will value most because we will like to see an object carved or touched by the human hand, not a machine".

But humans have always created imaginative new economic opportunities as well.

FIND OUT FOR YOURSELF

With current education and training currently [struggling to meet some of the challenges for the future workforce](#), Mr Dawson says we should "plan for [ourselves], look at the change and create a path and see what skills need to be developed".

"This is about organisational, social and personal responsibility. For all ages and people, we can learn and develop ourselves."

UTS professor of social robotics Mary-Anne Williams says there is only one strategy.

"Embrace the technology and understand as far as possible what kind of impact it has on your job and goals," she says.