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View: Why everyone needs to learn AI skills



Learning and creativity are more important than ever, even as AI skills become an increasingly essential requirement for many jobs in the coming decade.

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AI is expected to redefine how people work in the future, so they will need to be competent in the technology. For a long time, many people believed that AI was essentially a specialised technology used to perform very specific tasks.

Case in point: Radiologists use AI to help analyse X-ray scans to assess a patient's medical condition, but AI can only be used for this one job. However, an AI chatbot released in late 2022 that can tackle multiple tasks, changed the game.

ChatGPT showed the world that AI has the potential to become a general-purpose technology, as has happened with computers and smartphones. This suggests that everyone can potentially use and benefit from AI for different purposes across a range of areas as the technology evolves and becomes more pervasive. Even now, ChatGPT can help office workers and students draft reports, computer programmers write and debug code, artists generate design concepts, and more.

As AI affects more and more facets of our lives, having AI skills will become a prerequisite for a job in the next decade, just like how computer skills were a requirement for jobs 15 to 20 years ago.

In fact, in January this year, the International Monetary Fund said that AI will affect almost 40 percent of jobs globally, suggesting that everyone should learn AI skills at some level to avoid being left behind.

But not everybody has to be an AI expert and know programming. Just as with computer skills, the level of AI expertise required in the future will vary depending on one's role and job.

Recognising AI's limits, coding for the future

There are two main groups of people of interest. The first consists of "smart AI users". They may not know the technicalities of AI or how to code proficiently. However, they have enough knowledge to make the most of the technology and use it effectively to become more productive in their work. Take, for instance, workers who frame prompts to use ChatGPT to help them summarise multiple reports in a much shorter time than if they were to summarise the reports themselves. At the same time, they are keenly aware of the chatbot's limitations, such as how a summary might be more relevant to certain countries than others.

This quality control in discerning and assessing AI's output is crucial. The problem is that AI is trained on imperfect, incomplete and even incorrect data. As a result, AI's output can be wrong, as many past reports have pointed out.

So, smart AI users must be able to recognise flaws in AI responses and know that they need to be verified. If wrong answers are used to inform mission-critical decisions, the results could be disastrous.

The second group comprises "AI producers" who have the technical know-how and can write code to create AI programs. Think of the engineers who created ChatGPT and SEA-LION (Southeast Asian Languages In One Network), a Singapore-made AI chatbot that uses comprehensive data from Southeast Asia and is customised to the region's culture and languages.

Those who are even more technically inclined can develop a higher tier of skills and become AI experts at the frontiers of the technology to guide its future development. They have PhD degrees and include academic professors, researchers and top engineers.

How can people learn skills to become smart users and producers of AI? One way is through tertiary education, such as for undergraduate students, and continuing education and training (CET) for adult learners.

To start with, tertiary students can develop a fundamental understanding of AI and proficiency without having to do a lot of coding. This allows them to appreciate what AI can do and understand how to use it in their areas of interest.

Such knowledge is relevant as coding has become much simpler over time without the need for high-level coding skills to create basic AI.

Recognising the need to help students be ready for an AI-driven world, Nanyang Technological University, Singapore (NTU Singapore) recently introduced a Minor in AI programme that all NTU undergraduates can choose to take to become smart AI users.

Students will learn how AI and data science can solve problems across different fields. They can tailor the minor by selecting interdisciplinary electives aligned with their majors or interests.

NTU also launched a new Bachelor of Science in AI and Society degree program to nurture AI producers who can develop real-world solutions that put people at the heart of AI. It focuses on cultivating deep technical expertise among students while complementing that with an understanding of how AI could be misused. Students will also have the opportunity to develop AI solutions for domains and industries they are passionate about.

We will also need a group of exceptionally talented AI producers who can write sophisticated code well and do so very quickly to create successful AI solutions for the challenges we face. To groom these "commandos" among AI producers, NTU has a new Turing AI Scholars Programme.

For people already in the workforce, CET courses in AI can help them become more productive as they learn relevant skills to adapt to changes in their jobs brought about by AI. The skills can assist them in pivoting to new AI careers as well.



Adapting, learning and teaching to an AI world

Even as we encourage more people to learn AI skills, we need to consider how AI will affect learning too. As AI can put the world's knowledge at people's fingertips, it is natural to ask whether there is still a need to learn at all. But there will always be a need to learn. We are able to carry out our day-to-day tasks because we have acquired knowledge that allows us to understand various aspects of the world.

Without knowledge, we will not be able to comprehend what is happening around us and, by the same token, be unable to make sense of AI's output and judge whether it is good or bad.

One way to understand this is to liken AI to a global positioning system (GPS) app. If we blindly follow the app's directions without thinking, we may fail to realise if the app is taking us to a wrong destination that may have the same name as the place we want to reach, for example.

The implications are that we need to have strong foundations in knowledge that is relevant to what we do, even if AI already has the information. This will allow us to not only check AI's output but also have the basics to perform more creative, value-added work that AI is incapable of doing.

Another problem is if we stop acquiring knowledge; this is detrimental to creativity. Creativity is stimulated by knowledge – without it, we will not be able to develop new ideas and discover new things.

So, in a world where AI is pervasive, improving one's knowledge to boost creativity will be important.

In an AI world, how educators teach also needs to be reconsidered. Ideally, we want lessons to be customised to each student, with one teacher per student. However,

resource and time constraints make this difficult, and we often have one educator teaching the entire class.

With AI, one-to-one learning is possible. An AI-powered online lesson can simultaneously adapt to the pace and aptitude of each student in a class. For example, if the AI assesses in real-time that a student has a higher level of understanding, more advanced lessons can be delivered to the student.

AI can also adjust the format of the lessons it presents to students based on their preferred learning style. For example, visual learners can be taught with more graphics, while auditory learners receive more audio-based lessons.

Personalised learning through AI can also help students identify gaps in their knowledge and recommend relevant lessons to bridge these gaps. What this means is that educators are freed up to focus on teaching students new skills and knowledge, especially those that AI is not as good at.

AI can also help educators predict whether students might be falling behind in their grades so that help can be rendered to them early. AI can predict a student's performance based on their past academic record as well as the records of students from past cohorts.

Since 2020, NTU has been using such an AI tool to help our student care managers identify at the start of each semester, students at risk of struggling academically. With this tool, managers can now pay more attention to helping identified students by providing them support and assistance to succeed in their studies.

Another issue that educators need to consider is how students should be assessed if they can easily access AI tools like ChatGPT to generate answers on the fly and help them write assignment essays.

Instead of asking a student to produce an answer to a question, teachers can ask students to use ChatGPT to find the answer, critique the chatbot's replies and suggest how the answers can be improved.

With AI poised to change the world, we want the technology to uplift everybody and not just select groups of people. To do so, everyone needs to learn AI skills at some level to appreciate the power of AI and be able to harness it. Only then can we open our minds to the possibilities that AI can bring and fully reap its benefits.

Professor Ho Teck Hua is the President of NTU Singapore, where he is a Distinguished University Professor. He is also the founding Executive Chairman of AI Singapore, a national AI research and innovation programme.

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