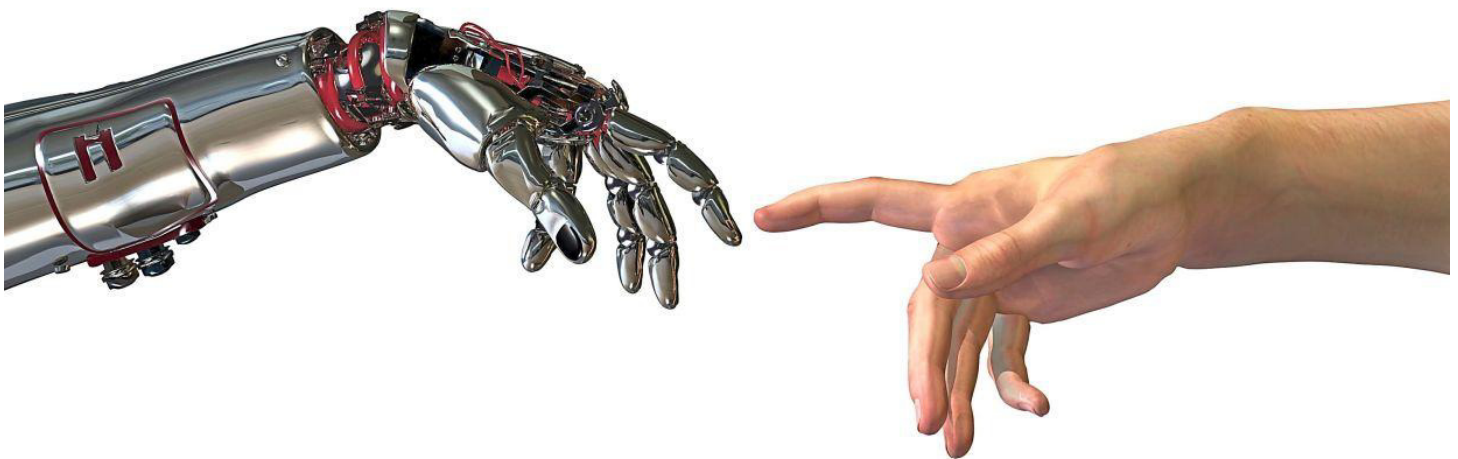# Be ready for IR5.0

By **LEONG WAI YEE - LIVE&LEARN**

EDUCATION

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Revolution-ready: Working alongside robots sounds fantastic, but humans must first learn how to work with these smart machines. – 123rf.com

Human-machine synergy key to smart manufacturing

INDUSTRIALISATION is driven by advances in science.

In the First Industrial Revolution, water and steam were used to motorise innovations. The Second saw large-scale manufacturing being powered by electricity. In the Third Industrial Revolution, robotics was introduced in the assembly line, while the Fourth Industrial Revolution (IR4.0) witnessed the rise and advancement of computers at an outstanding speed.

The expansiveness and profundity of these progressions heralded a change across all sectors, levels and frameworks.

The Fifth Industrial Revolution, or IR5.0, will centre on the co-activity of human and machine. Labourers will be upskilled, driving mass customisation and personalisation for individual clients.

IR5.0 looks to empower workers while addressing the evolving skills and training needs of employees. It increases the competitiveness of industry and helps attract the best talents.
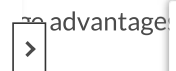
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Robots are now the mainstay of a majority of businesses and factories, particularly in tackling difficult or monotonous work. Robots cost lesser, work faster and are more efficient.

With the rising demand for customised items, the intricacy of creation is expanding and that's only the tip of the iceberg. Greater adaptability is required.

Robots with fixed programming plans will be replaced with flexible AI-based frameworks featuring synergistic robots that allow for communication between humans and machines.

This collaborative human-machine solution will lead to greater efficiency and prevent operational failures. Information gathered from the machines and the human work process will enhance AI capabilities.

The networked sensors for data interoperability and real-time production tracking, blockchain technology, 5G technology, AI, additive manufacturing, 3D processing, drone technology, extended reality, virtual reality, fibre optics, Internet of Things and robotics will take centrestage.

The main challenge faced by the medical, manufacturing, waste processing, information and communications technology, environmental and banking industries is creating harmony between humans and computerised robots.

Humans need to develop new skills. Working alongside robots sounds fantastic, but humans must first learn how to work with these smart machines. Both technical and soft skills are required.

Even as processes are digitised with modern robots doing work, humans must still be in control to ensure quality.

Education, carried out systematically and professionally, will be a deciding factor of whether we succeed with this man-computer-machine collaboration.

The mass growth of industries from textile to energy-based sectors saw the need for more competent labour to work in factories and manufacturing plants.

It brought about the need to have schools train people on how to work with new machinery that was being invented.

IR4.0 has seen teaching and learning adapted to suit individual styles and strategies.

Teachers need to see innovation as a necessary element in the teaching and learning process if we are to save time and increase student interest in learning.

In conclusion, all industrial revolutions have influenced the education system in producing innovations. Education institutions must thus step up to the mark.

Prof Dr Leong Wai Yie is a senior professor at INTI International University, as well as a fellow and council member at the Institution of Engineering and Technology (IET), United Kingdom. The views expressed here are the writer's own.