AI in Robotics to the Rescue – Learning from Home

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There is no doubt that the combination of Artificial Intelligence (AI) and Robotics has created a big hype in the last five years. It has done wonders in awakening the curiosity and the interests in most of the population on our planet. The integration of multi-disciplines, as well as the promises it makes to transform the future of work, are some of the factors that draw excitement in most people to understand these technologies regardless of their technical background or age.

AI and Robotics date back to more than half a century ago. One major breakthrough that lend to the emergence of Machine Learning as the driving force behind Artificial Intelligence is the invention of the internet. Coupled with 5G, the internet came with a huge amount of digital information being generated, transmitted, stored, and made available for analysis. Combined with the advances of computing power, newly curated algorithms have been most effective at leveraging all of the massive multi-modal data accumulated over time.

AI and Robotics nowadays are being applied to almost all industries, and soon, many companies which ignore this trend may be disrupted by startups that embrace the new normal.

The outbreak of the coronavirus - CoVID-19 – came at a timely juncture that is about to disrupt many industries. And, the next generation education pedagogy is not spared. The differential between weak AI and strong AI has made the significant impact in the learning environment.

Weak Artificial Intelligence, sometimes known as narrow AI, is AI that is focused on one narrow task or problem. Currently, most existing AI systems are applications of weak AI. Many a chatbot, like Siri, manifests narrow or weak AI. Siri operates within a limited predefined range, there has no genuine intelligence, no self-awareness. If you ask questions outside the limits of the application, don't expect Siri to respond, promptly.

Strong Artificial Intelligence is a machine that has a certain degree of quasi-consciousness, sentience or perception, and a 'mind' which accumulates intelligence. Such an AI machine, perhaps known as general AI, is a hypothetical machine that is capable of applying intelligence to any problem, rather than just one specific problem. Such a machine is assumed to manifest behavior at least as skillful and flexible as that of humans, or purportedly close to. The machine can be imagined to think and perform tasks on its own just like a human being.

In the learning environment, a digital learning companion is one such possible application of strong AI. Such a learning companion application carries a hybrid of intelligent tutoring functions, an e-learning component as well as a collaborative education supervisor. Besides the traditional teacher and student roles, adopted in a virtual sense, a new agent which plays the role of mentoring the student is crucial. Monitoring of the acquisition of knowledge is given an equal emphasis to learning behaviour. Such a learning companion should embrace a learning plan, an interactive mentor as well as the flexibility in learning.

If it is going to be of any use to the student, the learning companion needs to guide and pace the student's learning potential vis-à-vis pushing contents. The learning aid is also equipped with a monitoring tool to discover additional talents which the student could have exhibited beyond the learning prescribed space. Some of the ongoing research has supported the hypothesis that a less capable (digital) learning companion is helpful to a human student because it will nudge the child to excel, and explore his/her true potential.

Inadvertently, technologies such as AI and Robotics can be leveraged to augment the human learning potential. As a matter of fact, the current teacher-student ratio of 1:40 in a classroom can be further optimized with the use of technologies and a hybrid augmentation of physical and cyber space can possibly increase learning potential, perhaps exponentially.

The adoption of digital learning companion is expected to re-invent the current model. Borrowing the term from Industre 4.0, the arrival of Education 4.0 is imminent.