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Singapore firm designs robot masseuse

Updated: October 9, 2017 15:55 IST | Our Bureau

(from right to left) Inderjit Singh, Chairman of NTUitive, NTU's innovation and enterprise arm, gets a demo of Emma from Albert Zhang, founder of AiTreat, and NTU PhD student Liu Kai

Automation of select massages to address workforce shortage and rising cost in the country's healthcare industry

Singapore has just got a new masseuse. This one, named Emma, however, is vastly different from those in the profession.

Emma is a robot masseuse and the name stands for Expert Manipulative Massage Automation. It specialises in back and knee massages as it mimics the human palm and thumb to replicate therapeutic massages such as shiatsu and physiotherapy.

The robot masseuse started work on her first patients on Monday at Singapore's NovaHealth Traditional Chinese Medicine (TCM) clinic, working alongside her human colleagues – a physician and a massage therapist.

Emma 3.0 – the first to go into public service – is a third more compact than the first prototype unveiled last year, offers a wider range of massage programmes and provides a massage that is described by patients as almost indistinguishable from a professional masseuse.

to calculate the optimal massage and to track a patient's recovery over a course of treatments.

To address pain points

Founder of AiTreat and NovaHealth, Albert Zhang, said the company's technology aims to address workforce shortages and quality consistency challenges in the healthcare industry.

Using Emma in chronic pain management has the potential of creating low-cost treatment alternatives in countries where healthcare costs are high, and where aging populations have a growing demand for such treatment.

Emma was designed to deliver a clinically precise massage according to the prescription of a qualified traditional Chinese medicine physician or physiotherapist, without the fatigue faced by a human therapist, said Zhang.

"By using Emma to do the labour intensive massages, we can now offer a longer therapy session for patients while reducing the cost of treatment. The human therapist is then free to focus on other areas such as the neck and limb joints which Emma can't massage at the moment," said Zhang.

AI measurement

Emma has a touch screen with a fully-articulated robotic limb that has six degrees of freedom. Mounted at the end of the limb are two soft massage tips made from silicon, which can be warmed for comfort. The robot also has advanced sensors and diagnostic functions, which can measure the exact stiffness of a particular muscle or tendon.

The data collected of each patient is then sent to a server in a cloud, where an artificial intelligence (AI) computes the exact pressure to be delivered during the massage procedure.

The AI can also track and analyse the progress of the patient, generating a performance report that will allow a physician to measure a patient's recovery using precise empirical data.

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