Robot 'therapist' to improve productivity among TCM physicians

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SINGAPORE: A robot capable of giving targeted physiotherapy massages to relieve muscle strains and injuries has been developed by local start-up AiTreat, and was previewed on Monday (Jul 18).

The Expert Manipulative Massage Automation (EMMA) was created by Nanyang Technological University (NTU) graduate and AiTreat CEO Albert Zhang.

Mr Zhang, a Traditional Chinese Medicine (TCM) physician of five years, said: "TCM is competing with other industries for physically fit people who can learn TCM knowledge. It's pretty difficult. The salaries keep increasing. The clinics are not earning a lot of profit, even though the charge is not low any longer.

"So we hope, other than the solving the labour shortage, the robot can also bring scientific data. So, TCM (practitioners) can do research, can have scientific support to show to their patients what their condition is, what their improvement is, and what should be done in the future.

"We have designed EMMA as a clinically precise tool that can automatically carry out treatment for patients as prescribed by a physiotherapist or Chinese physician," he added.

"Our aim is not to replace the therapists who are skilled in sports massage and acupoint therapy, but to improve productivity by enabling one therapist to treat multiple patients with the help of our robots."

'EMMA' TO DO HEAVY-DUTY WORK
Physicians will continue to consult patients and perform physical check-ups - assessing what massages and methods are best - while leaving EMMA to the heavy-duty work.

"Basically, you build a work flow to tell the robot what to do. Then the robot will do the hard and tedious, time-consuming work," said Mr Zhang. "After that, the physician can do the manipulations and the acupuncture. If the physician has a lot of patients; if he's very popular, he can have an assistant to help them operate several robots at the same time, to serve more people and charge a lower price."

According to Mr Zhang, EMMA is probably the first such robot in the world developed specifically for use by TCM physicians and sports therapists.

EMMA has already been used to treat Singapore's national basketball team using acupoint therapy.

"There are different levels that the robot masseuse can do, so I think it will target the different needs, especially with team sports, like basketball, where it needs to cater to more than one athlete - all 12 of us," said national basketballer Leon Kwek. "So I think if we had a masseuse for one team, then he would be tired out by the time he reaches the seventh or eighth athlete. I think it helps reduce his workload, at the same time giving - in a way - equal treatment to every single one of us."

The robot comprises a single robotic arm, capable of highly articulated movements, and also has a 3D-stereoscopic camera for vision, and a customised, fully rotatable 3D-printed massage tip.

To ensure consistent quality of therapy, EMMA is equipped with sensors and diagnostic functions that will measure a patient's progress, as well as exact stiffness of a particular muscle or tendon. These are uploaded to the AiTreat's propriety cloud-based intelligence platform for analysis.

TREATING THE AGEING POPULATION
The robot has undergone trials at TCM clinic Kin Teck Tong since last week, where it has treated 50 patients.

Said Ms Coco Zhang, Executive Director of Kin Teck Tong: "Like many developed countries, Singapore has the problem of an ageing population. Over the next decade, more people are going to suffer from physical ailments such as arthritis and will be seeking treatment.

"In our trials with the robot, the experience has been very good, as it can perform most treatments as well as our therapists," she added.

Moving forward, AiTreat will focus on developing its second-generation robot, which is more compact and mobile, the start-up said. The team is also looking into using heated contact pads to better simulate human hands.

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