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ASIA EDITION

Singapore develops robot to assist in physiotherapy for elderly

September 8, 2022 | News

Called the Mobile Robotic Balance Assistant or MRBA



Researchers at Nanyang Technological University, Singapore (NTU Singapore) and Tan Tock Seng Hospital (TTSH) have developed a wearable assistive robot that can detect and prevent a fall before it happens, reducing the user's risk of sustaining injuries.

The development of the robot, which can also be used to aid patients' rehabilitation from their injuries, was catalysed by the National Robotics Programme, a multiagency national programme that looks at the end-to-end development of differentiating robotics enablers and solutions in Singapore, from funding R&D to facilitating partnerships for translation and adoption to maximise socio-economic impact.

Called the Mobile Robotic Balance Assistant or MRBA (pronounced 'Mister-Bah'), the robot uses its inbuilt sensors to instantaneously detect a loss of balance and catches the user with its attached safety harness which is worn around the user's hips.

The device would also help users who have difficulty in walking and balancing to stand up safely from a seated position, and to sit down safely from a standing position. It also uses a depth-sensing camera to observe the user's movements, while its machine-learning algorithms estimate the balance state of the user in real time to better predict any future imbalances or falls.

The innovation, which has been patented, has also received interest to be adopted by several Singapore home-care providers.