

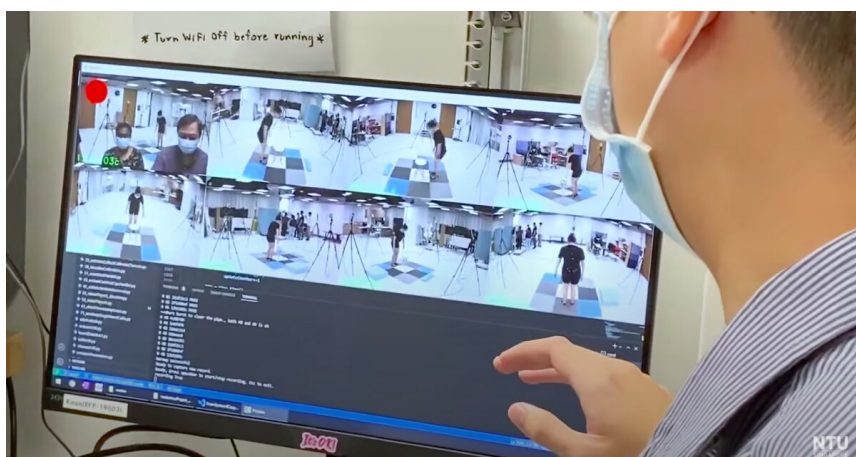
NTU researchers develop marker-less motion capture tech for physiotherapy

The system is trained with over 150 subjects to accurately locate human bone landmark locations.

By [Adam Ang \(/author/adam-ang\)](#) | April 04, 2022 | 09:41 am

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Credit: NTU Singapore

Researchers from the Nanyang Technological University in Singapore have developed a precise motion capture system to assist doctors and physiotherapists in consultations and diagnoses for patients requiring rehabilitation after an injury or recovering from an illness.

WHAT IT DOES

Called Precise Marker-less, the system is trained with over 150 subjects through machine learning to render 3D anatomical bone landmark locations with an accuracy of 10-15 millimetres or about the width of an adult's finger.

It requires a setup of two to four cameras, a computer, and a calibration kit, which processes data derived from analysing a subject's movements. This makes it ideal for

industry-based settings that require little time and space, NTU Singapore noted in a press statement.

The research team from NTU's Rehabilitation Research Institute of Singapore (RRIS) is in the process of filing a patent with NTUitive, the university's innovation and enterprise company.

WHY IT MATTERS

Most motion capture labs use a marker-based system, which involves attaching reflective markers to a subject's body and capturing the movements of those markers in 3D through a camera. This system, the university noted, prevents itself from being applied in many healthcare and commercial settings, as its use is time-consuming and requires professional training. Moreover, those markers do not capture the human body's most natural movements as subjects need to be careful not to knock the markers out of place.

The RRIS' Precise Marker-less eliminates the need for such markers as it already learns the positions where those markers would be positioned.

By removing the use of markers and manual data post-processing, this new motion capture system enables consultations to take "an hour or less on average," according to the researchers.

Moreover, its precision can be attributed to a cache of data collected by the RRIS which includes over 10 million images of human movements or around 16 terabytes of data as of late.

Dr Prayook Jatesiktat, an RRIS fellow who led the development of the Precise Marker-less, said their motion capture tech could be used by doctors and physiotherapists to objectively analyse their patients' movements.

Dr Tan Shu Yun, a senior consultant at the National Healthcare Group Polyclinics, also saw that the technology can also be deployed in clinics, hospitals and community rehabilitation centres to provide objective assessments of various pathologies, especially those related to movement disorders.

Additionally, athletes and coaches could use the system to assess their sport-related actions while animators could also adopt the technology to drive their characters' movements, Dr Jatesiktat shared.

The RRIS team is continuing tests on its new technology, aiming to further support the analysis and treatment of more physical movement disorders.

According to NTU Singapore, the Posture Lab, a local physiotherapy and sports massage provider, and imaging solutions provider JM Vistec System have taken interest in Precise Marker-less.

MARKET SNAPSHOT

Early in March, digital MSK care firm **RecoveryOne** (<https://www.mobihealthnews.com/news/msk-startup-recovereveryone-launches-sensorless-motion-tracking-tool>) launched the Motion Trainer, a computer vision tool that tracks motions without using a wearable sensor. It provides visual and audio guidance to users through a device's built-in camera, ensuring patients can conduct physical therapy correctly and effectively in a virtual environment.

Last year, Dutch firm **Xsens** (<https://www.mobihealthnews.com/news/emea/dutch-3d-motion-capture-company-xsens-expands-its-automatic-reporting-movement-data>) introduced an automatic reporting feature on its MotionCloud platform, which analyses movements via wireless motion sensors attached to a user's body.

In other news, **wrnch** (<https://www.mobihealthnews.com/news/hinge-health-scoops-wrnch-boost-digital-msk-clinics-motion-tracking-capabilities>), which develops a computer vision tech for measuring body motion, has been acquired by Hinge Health. The acquisition adds motion tracking capabilities to the latter's digital MSK Clinic.

Tags: **Nanyang Technological University** (/tag/nanyang-technological-university), **Singapore** (/tag/singapore), **digital MSK** (/tag/digital-msk), **motion capture** (/tag/motion-capture), **motion tracking** (/tag/motion-tracking), **physiotherapy** (/tag/physiotherapy)

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