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IIT–Bombay team designs a wearable device

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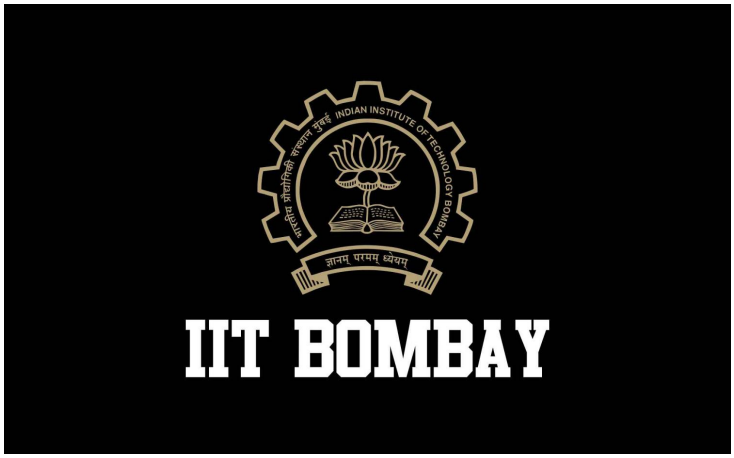

Researchers at the Indian Institute of Technology (IIT) Bombay have developed a thin, light, wearable gesture-tracking device that behaves like a second skin and is able to precisely detect mechanical movements such as bending and stretching of the joints of the hand.

The device can find applications in physiotherapeutic recuperation of stroke patients, personalised point-of-care health monitoring systems, and robotics.

The researchers used a polymeric film as a matrix in which carbon nanotubes are uniformly distributed. When the matrix is stretched or bent, the way the carbon nanotubes are connected changes. This produces a change in the electrical pathway across the device which is measured as change in resistance.

Unlike other devices which use metallic electrodes, the one developed by the IIT–Bombay team uses the same carbon nanotubes for electrodes. Metal electrodes are more prone to failure and fatigue and are uncomfortable when used directly on skin. So the team has made the electrodes by coating a cotton thread with carbon nanotubes.

Studies will be carried out on healthy individuals and those with arthritis to understand the difference in movement of joints. Later, those with early-stage arthritis will be enrolled and a longer-duration study will be conducted.