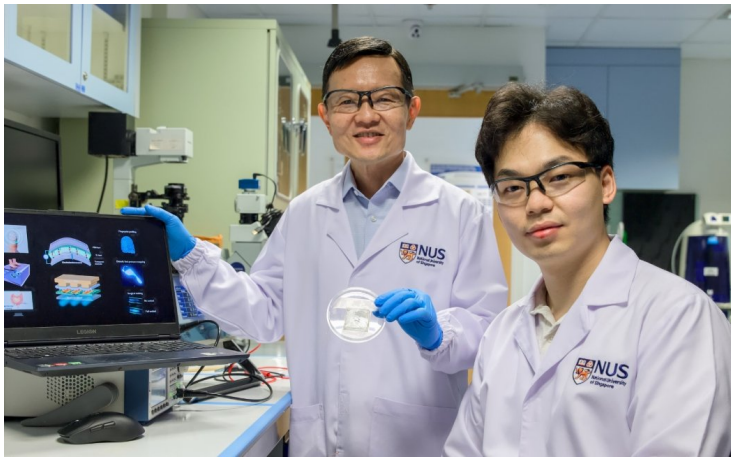
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ASIA EDITION

Singapore designs electronic skin combining sensing and visualisation in single device

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Enabling high-resolution mapping of touch for healthcare and robotics applications



Researchers from the National University of Singapore (NUS) have developed a next-generation electronic skin that can both sense and directly visualise pressure in real time, addressing key limitations of current wearable sensing technologies.

Electronic skin systems are increasingly used in healthcare, robotics and wearables, but most rely on arrays of sensors connected to external electronics for signal processing and display. These designs often face limitations such as low spatial resolution, wiring complexity and inefficient signal interpretation, making intuitive real-time feedback difficult.

To address these challenges, a team led by Professor Lim Chwee Teck from the NUS Department of Biomedical Engineering and the Institute for Health Innovation & Technology (iHealthtech) developed a soft, ultrathin device called the "eLuminator".

The eLuminator shows strong potential in surgical training and healthcare monitoring, where precise force control is critical but difficult to achieve due to the lack of tactile feedback. When integrated into surgical tools, it provides real-time visual feedback on applied force, improving precision and reducing the risk of tissue damage. It can also map pressure distribution on the foot, supporting early detection of areas with high risk of foot ulcers in diabetic patients.

The research team is working to further improve the device's sensitivity and reduce its power requirements, while advancing deployment in high-impact healthcare applications.