## research highlights

**HUMAN-COMPUTER INTERACTIONS** 

## Tactile glove picks up shapes

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Credit: Springer Nature Ltd

Tactile sensing networks that probe the ability of the human hand to perceive stimuli such as pressure are useful in understanding the human grasp and ultimately building robots that can manipulate objects.

Obtaining large datasets from such sensing networks has, however, proved challenging. Subramanian Sundaram and colleagues at Massachusetts Institute of Technology have now developed a low-cost, scalable tactile glove — termed STAG — that can obtain tactile data from an entire human hand.

The STAG platform uses an array of 548 interconnected force sensors, attached to a knitted glove. Large-scale datasets of tactile maps were recorded while the glove was used to handle 26 common objects, including a mug and a pen. Because different areas of a hand are used to handle

different objects, it was possible to extract correlations between the sensor results and the objects handled, and Sundaram and colleagues used the recorded data to train a convolutional neural network to identify the objects. They found that heavy objects with distinct features are easier to detect than light objects with similar shapes, and that the accuracy of object classification reduces when a smaller number of sensors are used. They also showed that it was possible to train a similar neural network to predict the weight of an object from data in which objects were lifted up.

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