

This touch-sensitive glove is made from stretchy optical fibres



This glove can detect when it is bent, stretched or put under pressure

A touch-sensitive glove made from stretchable fibre-optic sensors could be used in robotics, sport and medicine.

“We made a sensor that can sense haptic interactions, in the same way that our own skin sensors interact with [the] environment,” says Hedan Bai at Cornell University in Ithaca, New York.

Bai and her team created the glove using optical fibres made from thin elastomeric polyurethane cables that transmit light from an LED. The light is interrupted when the cables are bent, stretched or put under pressure.

The team dyed parts of the fibres with different colours, meaning that as they are distorted, the colour of light coming out of the fibres changes. The researchers analyse the light patterns to estimate the location of and type of distortion in the glove.

Because the fibre optic sensors are stretchable, they could be used in [smart clothing](#), wearables and soft robots. “You don’t want a stiff sensor in a soft robot because it is limiting what the robot can do,” says team member Rob Shepherd, also at Cornell.

The team is also looking at sport and medical applications. “We intend on using these stretchable optical fibres for measuring respiration and muscle contractions in the next year,” says Shepherd, along with looking at ways to provide information on a baseball player’s interactions with the ball. “This will provide a lot of insight that the coach can draw on to improve the player’s performance,” says Bai.

“These sensors can do it all,” says Andrew Spielberg at the Massachusetts Institute of Technology. “The fact that it can measure so many deformation modes at once – bend, stretch and press – is very promising.”