iSkin

Flexible, Stretchable and Visually Customizable On-Body Touch Sensors for Mobile Computing

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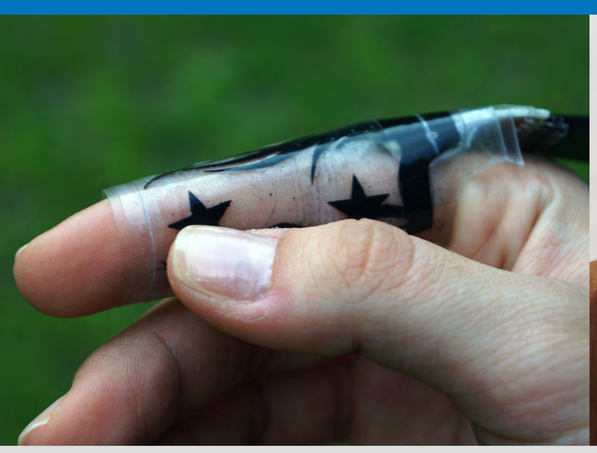
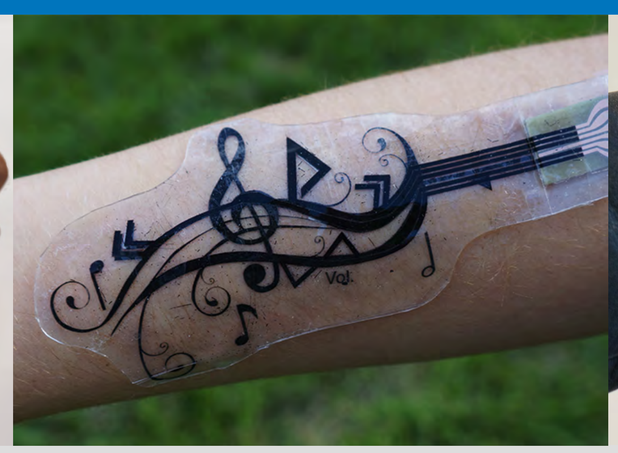
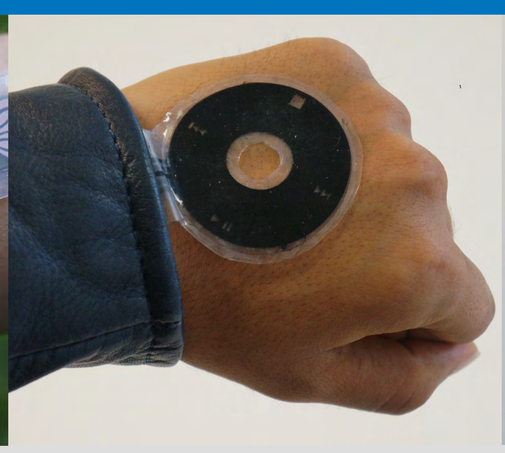
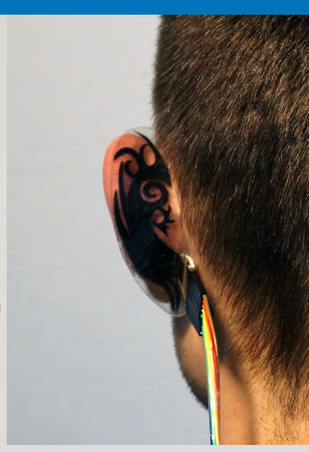








iSkin is a novel class of skin-worn sensors for touch input on the body. The sensor is a very thin overlay, made of biocompatible materials, and is flexible and stretchable. It can be produced in different shapes and sizes to suit various locations on the body.

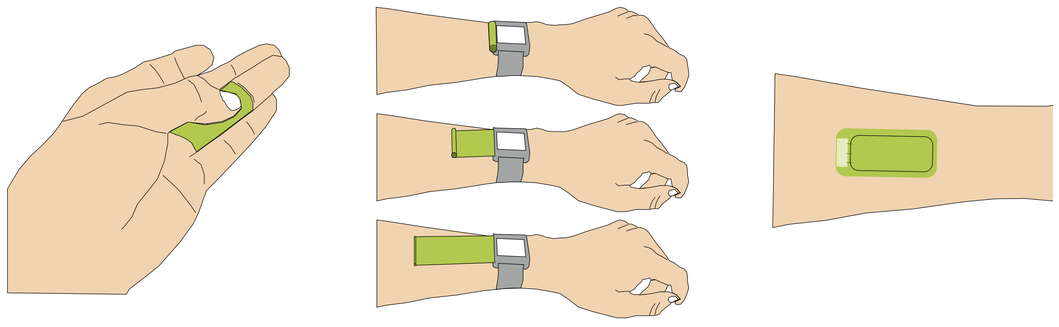
Device Types

iSkin enables various novel types of body-worn input devices and different forms of attachments.

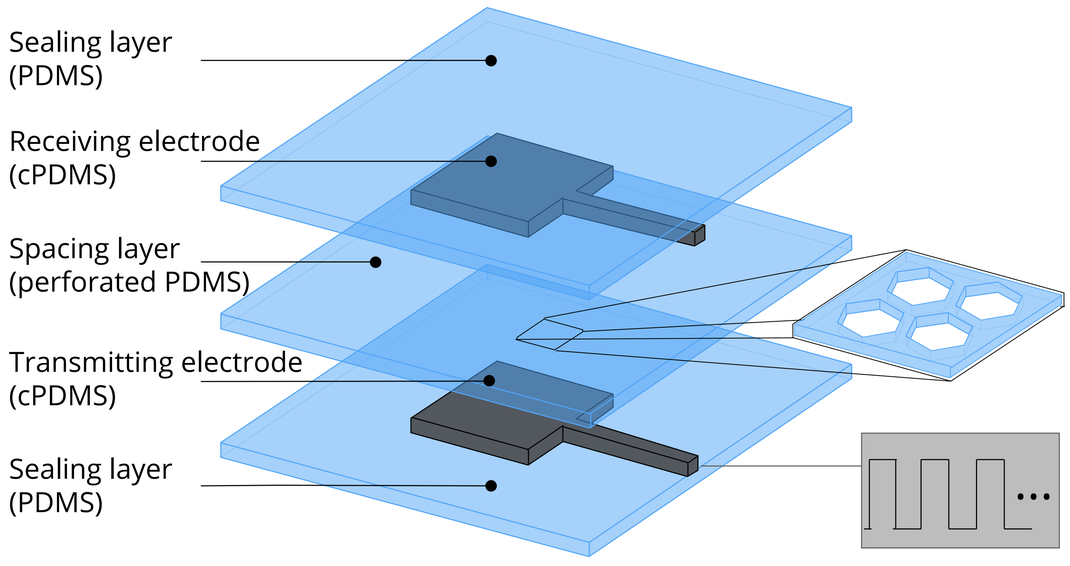
Fingerstrap, wrapped around the finger

Rollable keyboard, attached to a smartwatch

Skinsticker, sticked using skin-friendly adhesive

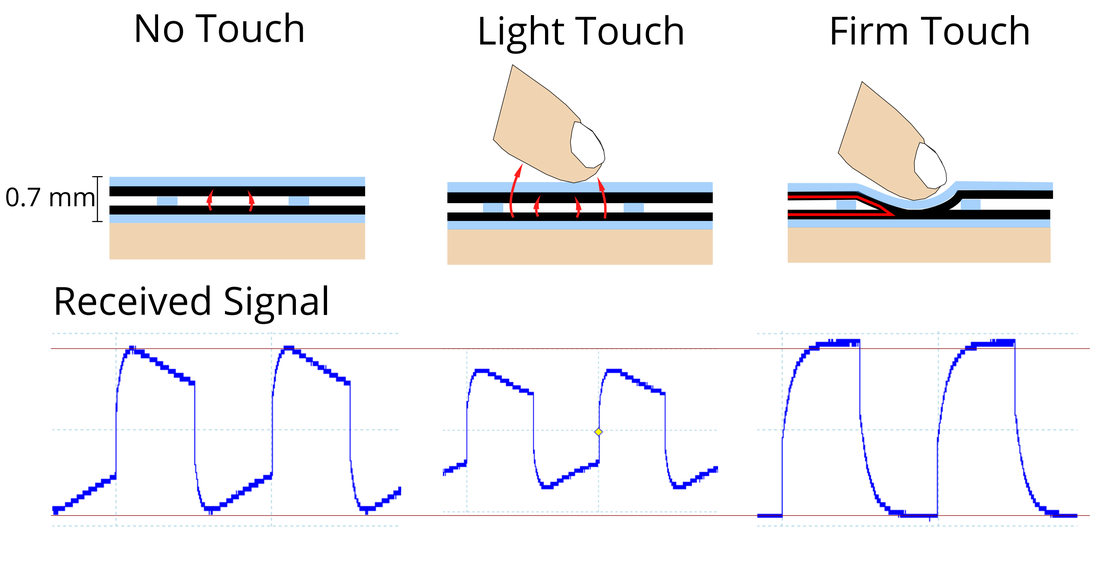


Soft-Matter Sensor

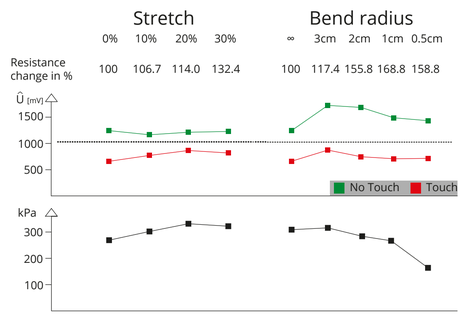


The sensor is a sandwich composed of multiple layers of silicone. Non-conductive parts are made of transparent PDMS, while conductors are realized with carbon-doped PDMS. Both materials are biocompatible, flexible and stretchable.

On-Body Touch Sensing



Capacitive and resistive sensing on the same electrode structure senses multi-touch, give precise real-time data about touch down and touch up, and can distinguish two levels of normal force.

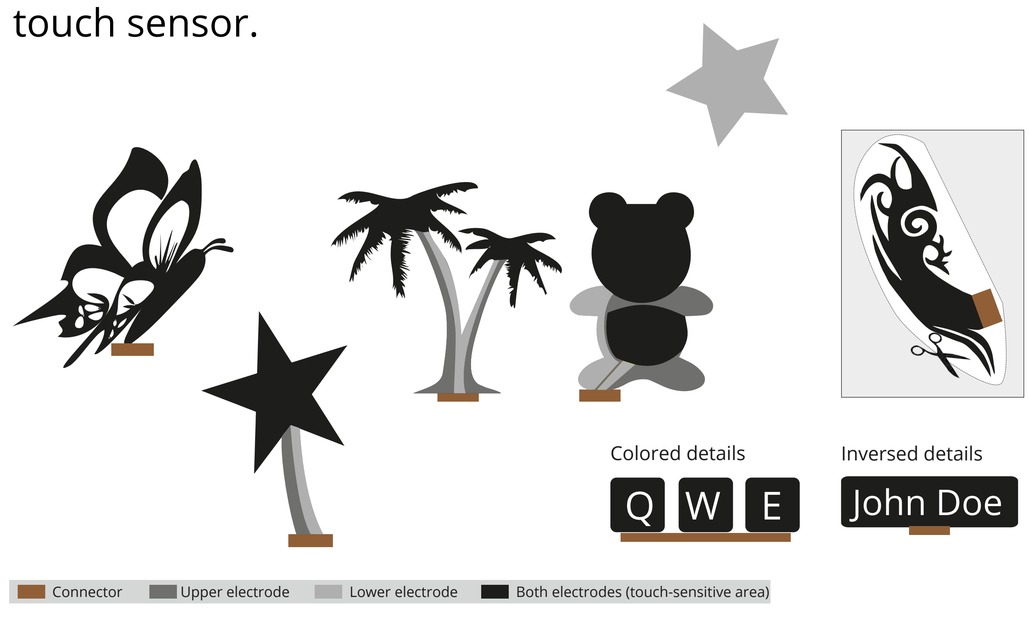


The sensor remains functional while it is stretched by up to 30%. This is more stretchable than skin.

It also remains functional while it is bent with a radius of 5mm and hence supports use on curved body locations.

Visually Customizable Sensors

We also address visual aesthetics of the sensor, considering the important role of aesthetics for any body-worn accessory. We contribute design patterns for visual customization of sensors. These allow designers to transfer an existing vector graphics into a functional touch sensor.



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