

## **Exploring comfortable skin-worn sensors for touch input**

August 11 2015, by Nancy Owano



Researchers are making an attempt to steer us closer to comfortable touch mechanisms for operating mobile devices. A promising sign that they are on to something is evident in iSkin.

A team from Max Planck Institute for Informatics, Saarland University, Carnegie Mellon, CNRS LTCI, Telecom-ParisTech and Aalto University have authored a paper describing their work in "iSkin: Flexible, Stretchable and Visually Customizable

On-Body Touch Sensors for Mobile Computing."

They envision a digital life where one can use a comfortable, light wearable such as finger strap, arm sticker and even keyboard extensions



on rollout paper attached to the wrist device for mobile touch input.

A video shows iSkin in action. In one scene, it is an arm sticker to control a music <u>player</u>; the person presses various places on the sticker to play a song or adjust the volume. Another scene shows somebody using a finger overlay to accept an incoming call. The video also shows a keyboard extension that can be rolled out on demand for a smartwatch text entry.

iSkin is flexible and stretchable; it can detect touch input with two levels of pressure, even when stretched by 30 percent or when bent with a radius of 0.5 cm, they said. It can be of different shapes and sizes for different parts of the body—-such as fingers, forearm, or ear.

A key feature is its construction of biocompatible materials. That requirement was not taken lightly. The authors in the paper said "iSkin should be non-toxic, and easily cleanable, washable, or replaceable in order to limit the accumulation of pathogens such as bacteria. Moreover, the properties of skin vary greatly." As "wrinkliness, oiliness, and distribution of receptors, sweat glands, and hair follicles" vary across body locations and individuals, they said this presented a requirement for materials and adhesives compatible with natural skin and exhibiting a high variability of form factors.

What they came up with is "based on advances in electronic skin (e-skin) and soft-matter electronics, an active research field in robotics and material science."

The sensor can be thought of as a sandwich composed of multiple layers. They wrote that "iSkin is made of multiple layers of thin, flexible and stretchable silicone. The base material is polydimethylsiloxane (PDMS), an easy-to-process silicone-based organic polymer. PDMS is fully transparent, elastic, and a highly biocompatible material."



A Reuters report by Matthew Stock on Monday had further comments on the materials and the research from co-developer Martin Weigel, who said the technology was initially coming from robotics :where it's used to give robots kind of a feeling similar to the human body, to human skin. However, we are the first to look into how we can use it on the body to control <u>mobile devices</u>; so as a kind of second-skin which nicely conforms to your <u>body</u>."

Weigel said carbon particles inside the silicone make it conductive so they can use it for electronics. The Reuters report added that the stickers are attached to the body using a medical-grade adhesive, easily peeled off after use without hurting the skin.

In their paper, they said that study results showed the sensor remained functional under typical and extreme deformations occurring on the human body; also it accurately sensed touch input when worn on various body locations.

Right now there are no signs that you will find iSkin sensors in the marketplace; this is a proof of concept, said the authors, of on-skin touch sensing "that bears some promise over rigid sensors and computer vision based solutions."

More information: iSkin: embodied.mpi-inf.mpg.de/research/iskin/

## © 2015 Tech Xplore

Citation: Exploring comfortable skin-worn sensors for touch input (2015, August 11) retrieved 3 May 2024 from <u>https://techxplore.com/news/2015-08-exploring-comfortable-skin-worn-sensors.html</u>

This document is subject to copyright. Apart from any fair dealing for the purpose of private



study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.