Docket #: S13-161

Method and Apparatus for Sensing Touch

Stanford researchers at the Khuri-Yakub Lab have developed a new sensor topology that will enable high-resolution touch sensing and reliable authentication on portable electronics.
This sensor technology adds a new touch sensing dimension on a 2D array of sensors for use in touchscreen displays, such as those for smart phones and tablets. Highly sensitive, touch-based touch sensing will enable high-resolution touchscreen that only relies on the pressure applied and will be able to work with all types of stylus including finger, gloved finger, and pen.
Additionally, the same concept can be integrated with fingerprint scanning capabilities in a more compact form with less power requirements than current optical fingerprint scanners. The proposed integrated sensor can be fabricated using simple, standard processes.

Figure

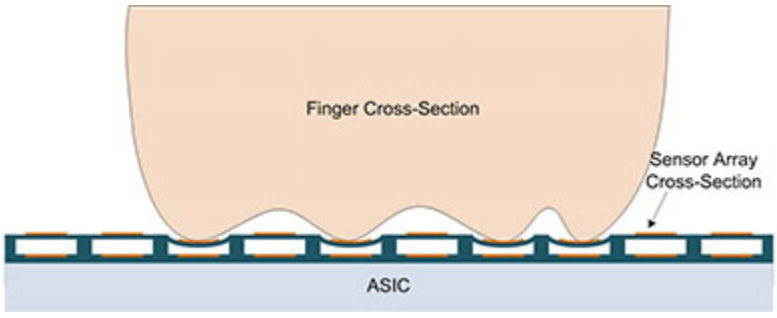


Figure description - Conceptual drawing showing the sensor as a fingerprint scanner. The “mechanical” part (i.e., the cells) is shown integrated with an ASIC to touch the deflection. Some of sensor cells would touch the ridges. Detecting the touched cells is the basis for creating the fingerprint.

Stage of Research - Proof-of-principle completed

Applications

- **Touchscreens** including smart phones, tablets, video games
- **Fingerprint Scanner**
- **Biometric applications** - Today it is possible to add temperature as a biometric sensed variable during the collection of the finger print.

Advantages

- **Simple fabrication method** using standard processes
- **Improved sensitivity** - Adds pressure sensing, providing new dimension to current touchscreens
- **Enables high-resolution touchscreen** that only relies on the pressure applied and therefore it would work with finger, gloved finger, pen, etc.
- **More compact and lower power** than current optical fingerprint scanners
- **More secure** requiring real finger-print shape rather than the pattern of light and dark that makes up the visual impression of a fingerprint with optical devices
- **Flexible design** – can mix a high-resolution and low-resolution array of these cells on the same device to simultaneously address multiple needs on a single device

Patents

- Published Application: 20140362013
- Issued: 9,678,591 (USA)

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