

Press Release

New Touchscreen Identifies Authorized Users Based on Their Fingerprints

CeBIT 2014

Hannover/Potsdam. Young researchers at the German Hasso Plattner Institute (HPI) have developed the world's first touchscreen that identifies the fingerprints of its users in a split second. The table-size screen recognizes whether users are authorized to carry out the respective action without registration or login and allows them to work together simultaneously. This simple yet secure system of user ID works with optical fiber technology and rear projection. The current prototype "Fiberio" is being presented at the CeBIT by HPI master student Sven Köhler (23) in Hall 9, at booth D40 of the Federal Ministry of Education and Research. Köhler and classmate Dr. Christian Holz - who has earned his PhD in the meantime - are winners of the prestigious CeBIT Innovation Award. The award is co-presented by the German Federal Ministry of Education and Research and Deutsche Messe.

The new multitouch table for digital interaction offers a user-friendly and high standard of security. "The problem that has existed until now of unauthorized users being able to gain access to a device in an unobserved moment has been eliminated with Fiberio," Köhler said. It is no longer necessary to set up a time-out and to constantly re-authenticate with repeated log-ins. With the new system, Köhler and his fellow student found a way to dispense with PIN code entries or a separate fingerprint scanner as in the latest iPhone.

Instead, Fiberio carries out a permanent biometric authentication via fingerprint recognition. This is important, for example, when several users at the same workplace with different levels of authorization process digital documents. "For instance, Fiberio can recognize which one of the two bank employees, who work with the same system, has the authority to release the payment of a certain amount displayed," Koehler explained.

The HPI researchers envision that it will be possible in the future to provide more transparency - even in security-critical systems. For example in banks and hospitals, where because of security concerns important data still disappears behind glass, along with the computers and the people who operate them. "Large interactive touchscreens could be realized with Fiberio where company employees could work together with customers and doctors with patients. Nevertheless, the data would be safe at all times because Fiberio knows with every touch who is allowed access to what," said Köhler.

One of the first steps in the practical use of the Fiberio technology is however more likely to be a user-friendly fingerprint scanner that can be easily operated like a touchscreen. Such scanners already make it possible for bank customers in some countries to withdraw cash at automatic tellers without the PIN entry – but they are often not operated properly.

Initially, scientists in the HPI Human Computer Interaction research group want to miniaturize the technology behind Fiberio, for example for use in mobile devices. “Ultimately, we want to build computer systems with the capability of ensuring their own security, instead of passing that effort and responsibility on to the user, as has been the case until now,” said the Potsdam HPI student. The researchers envision the mobile devices already becoming personal items that can only be used by their owners at the sale counter.

In early October, the innovation was honored with the “Best Paper Award” at a scientific symposium (ACM User Interface Software and Technology 2013) in St. Andrews, Scotland. “The idea that a device can only be used by its owner has long been imagined in science fiction movies. With Fiberio we have made it a reality,” said HPI professor Patrick Baudisch, in whose research area, “Human Computer Interaction”, the innovation was developed.

Fiberio authenticates the user – biometrically and securely - for the particular interaction that is being run at that time, according to Baudisch. Because authentication only applies to the element on the screen the user touches, the risk of unauthorized access is eliminated. A visual impression of Fiberio can be seen on this video: www.youtube.com/watch?v=p1a5yLzuTqA.

The CeBIT Innovation Award is awarded by the Federal Ministry of Education and Research and the trade fair organizer, Deutsche Messe. It honors outstanding developments in the fields of design, user-friendliness and human-machine interaction. The CeBIT Innovation Award is endowed with a total of 100,000 Euros. The ranking of the three winning teams will be announced at the fair.

Please find more information on the HPI website: www.hpi.uni-potsdam.de/ baudisch/projects/fiberio.

Profile of Hasso Plattner Institute

The Hasso Plattner Institute for Software Systems Engineering GmbH (HPI) in Potsdam is Germany’s university excellence center for IT Systems Engineering. It is the only university institution in Germany offering the bachelor and master program in “IT Systems Engineering” – a practical and engineering-oriented study program in computer science, in which 470 students are presently enrolled. The HPI School of Design Thinking is

Europe's first innovation school and modeled on the Stanford d.school. It offers 240 places yearly for a supplementary study. There are a total of ten HPI professors and over 50 guest professors, lecturers and contracted teachers at the Institute. HPI carries out research noted for its high standard of excellence in its nine topic areas, as well as at the HPI Research School for PhD candidates, with its further branches in Cape Town, Haifa and Nanjing. HPI teaching and research focus on the foundation and application of large-scale, highly complex and networked IT systems. The development and exploration of user-driven innovations for all areas of life is an additional field of importance. HPI always earns the highest positions in the CHE university ranking. Since September 2012, HPI has been offering its own interactive Internet learning platform - openhpi.de. Its free, open online courses are available to everyone.

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