



March 17, 2017

Protection of biometric information against threats arising at border between cyber and physical worlds

--BiometricJammer: A method for preventing photographic capture of fingerprint information,
shown at CeBIT 2017--

The National Institute of Informatics (Chiyoda-ku, Tokyo; Director General: Masaru Kitsuregawa; "NII," hereafter) will participate in the Japan Pavilion at CeBIT 2017, the world's largest exhibition for information technology showcasing the Internet of Things (IoT), big data, artificial intelligence, and robotics, to be held from March 20 to 24 in Hannover, Germany. At the exhibition, NII will introduce NII Biometric Security (NII-BioSec), an R&D project aimed at protecting biometric information against the threats arising due to advances in sensor technology and media processing, and will demonstrate BiometricJammer, a method for preventing photographic capture of fingerprint information that neither inhibits fingerprint sensor authentication nor causes any visual discomfort, which is the first in the world to be developed.

As the resolution of digital cameras increases, it is becoming easier for them to capture fingerprint information that was hitherto only accessible with contact-type fingerprint sensors. It has been shown that this raises the possibility of replicating a fingerprint remotely with a digital camera, and even of creating fake fingers that can be used for unauthorized computer access or identity theft. A research team led by NII Professor Isao Echizen was the first in the world to use such a camera to extract sufficient fingerprint information for fingerprint sensor authentication from an image of a finger taken from three meters away. The team previously proposed BiometricJammer for preventing photographic capture of fingerprint information without preventing fingerprint sensor authentication .

Now, the team has adapted BiometricJammer so that it affixes a pseudo fingerprint pattern to fingertips instead of a geometric pattern, which is a simple method of affixing it that does not

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cause any visual discomfort (see Fig. 1). The proposed method can also prevent photographic capture of fingerprint information without inhibiting the fingerprint sensor authentication normally used by smartphones and the like.

In addition to the above exhibition, NII will demonstrate a mass production model of the PrivacyVisor, eyewear that can prevent detection of the wearer's face, which is based on privacy protection research carried out by Prof. Echizen and has been developed using eyewear frame technologies from Sabae city, Fukui Prefecture in Japan, known as the "City of Glasses."

These exhibitions are supported by JSPS Grants-in-Aid JP16H06302, JP16K12431, and JP15H01686.

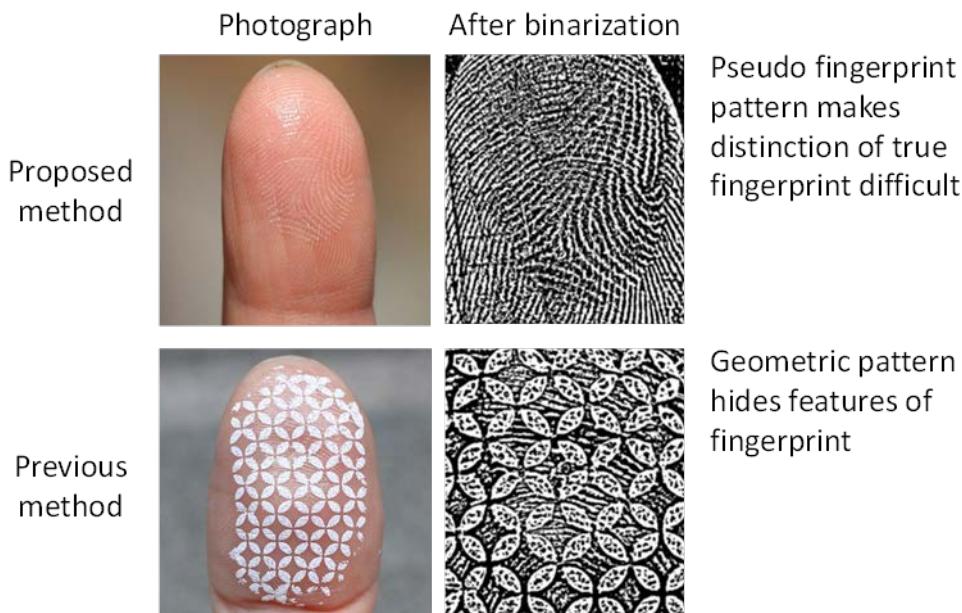


Fig. 1: Comparison of proposed and previous methods.

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