

HAND GEOMETRY. Hand biometrics on mobile devices

Biometric system verification based on hand geometry oriented to mobile devices



Contact information

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Technological Offers type

Technological solutions

Research and innovation areas

- Digital Technologies, Artificial Intelligence, Cybersecurity, 5G, Robotics
- Security, Defense and Disaster-Resilience

ODS



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Where?

Biometry, Biosignals, Safety and Smart Mobility Group Home Automation Centre, CEDINT

Keywords: | [biometrics](#) | [hand](#) | [security](#)

Brief description of the technology solution and the added value it provides

The Group of Biometrics, Biosignals and Security (GB2S) within Centro de Domótica Integral (CeDIInt) from Technical University of Madrid has developed a fast and reliable biometric verification system oriented to mobile devices. The system is able to verify an individual based on a hand picture taken by a mobile phone. Main advantages rely on not requiring any contact flat surface, few constraints when carrying out the hand acquisition and a certain resistance against biometric attacks, such as tamper biometrics or spoofing attacks. The proposed system is able to perform a verification within less than 2 seconds in a standard mobile device (smartphone) with an accuracy of 98%, being also able to achieve false acceptance rates close to 0%, which means a great acceptance by the final user.

Description of the technological base

This solution is based on a verification software by means of hand geometry, without requiring much collaboration from the final user.

The system is able to verify the identity of a person allowing different degrees of hand rotation and distance to camera, on condition that hand is within a plain parallel to the camera.

The proposed method provides with a unique template for each individual, based on which the system carries out a comparison involving a very low computational cost.

Furthermore, the implementation of this system in Android allows its embedment in any mobile devices based on this former technology.

“The proposed biometric system is able to verify the identity of an individual with false acceptance rates close to 0% in a mobile devices in less than 2 seconds”

Market demands

“The use of biometrics on mobile devices could increase the confidence on mobile devices payment, making biometrics being present on each transaction from a mobile device”

Security

- Secure systems based on authentication (verification) in mobile devices in order to avoid spoofing attacks.
- Fraud on payments on mobile devices arises to losses close to 1.13% for each transaction.
- Security in payment on mobile devices is currently under development and it must be solved in order to ensure user acceptance.

Transport

- There is a certain need to speed the acquisition of transport tickets in different platforms: underground, train, bus, plane. Save in paper and dedicated devices.

Identity verification on mobile devices

- Blocking mobile.
- Limited access to certain applications in the mobile (mail, agenda).
- Temping agency to “hire” by mobile phone.
- Security, alarm management from the mobile device.
- Bounded to a buying ticket (access to a specific event associated to the service the user has acquired).

- Adequate age confirmation for visualization in mobile devices.

Competitive advantages

- No additional hardware is required as only an embedded camera is needed, and nowadays are included within each mobile.
- No flat platform is required to acquired hand picture.
- Low computational cost, being the whole process carried out within the mobile device.
- Advanced prototypes embedded on an Android platform.
- Possible to be used with other devices with cameras (interoperability) and with other programming languages (iOS, Symbian).
- Non-invasive technique and with high user acceptance.

Development stage

- Concept
- Research
- **Lab prototype**
- Industrial prototype
- Production

Contact

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