

- 1** Measure similarity between reference features and current features.
- 2** User is accepted if match is above a predefined threshold.

NEW ISSUE

## False Positive

Accept wrong user: security problem.

## False Negative

Reject legitimate user: creates embarrassment and an inefficient work environment.

# FORGED FINGERS - Recap

## Fingerprints and Biometric Traits

In general, may be unique but they **are no secrets**.

- In September 2013, hackers show how to lift fingerprints from iPhone 5s. Similar attacks also apply to Samsung S5 phone.  
<http://www.ccc.de/en/updates/2013/ccc-breaks-apple-touchid>

## Rubber Fingers

Rubber fingers have defeated many commercial fingerprint recognition systems in the past.

- Minor issue if authentication takes place in the presence of security personnel.
- When authenticating remote users additional precautions have to be taken to counteract this type of fraud.

## Secure Storage

Secure storage of biometric data is an important requirement from the angle of personal privacy protection.

## Suggested further reading on authentication (not mandatory):

- Menezes et al. *Handbook of Applied Cryptography*. Chapter 10. <http://cacr.uwaterloo.ca/hac/>
- R. Anderson. Security Engineering. Chapter 15. <https://www.cl.cam.ac.uk/~rja14/book.html>
- [2<sup>nd</sup> edition free & downloadable](#)