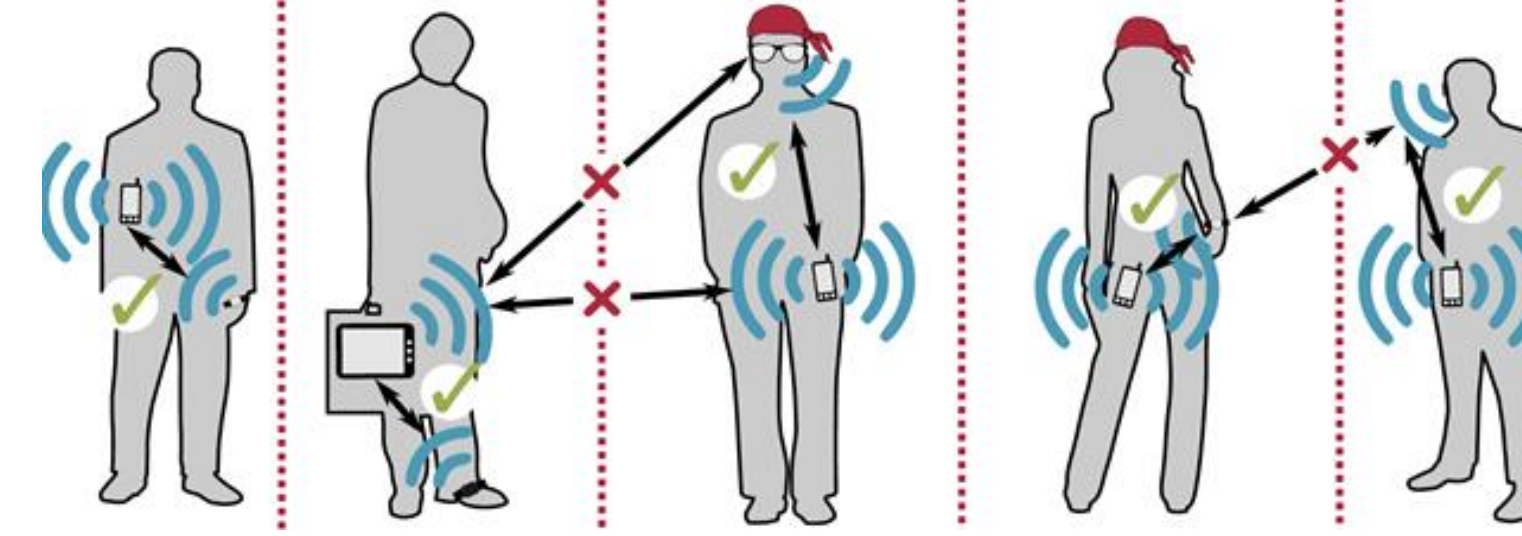


Context-based Authentication and Device Pairing

BANDANA – Body Area Network Device-to-device Authentication using Natural gait [PerCom 2017]

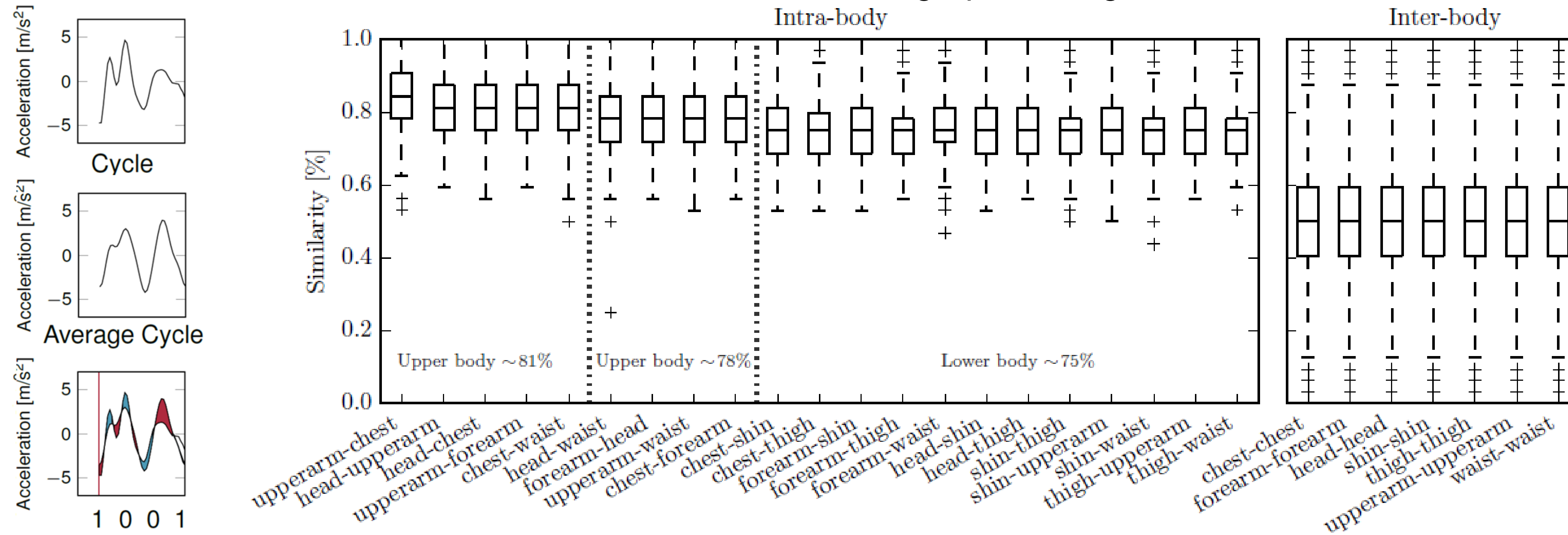
Concept

- Connecting on-body devices: **ad-hoc** and **secure**
- **Gait fingerprinting** based on gait cycle variation
- Using **error correcting code** to derive secret keys



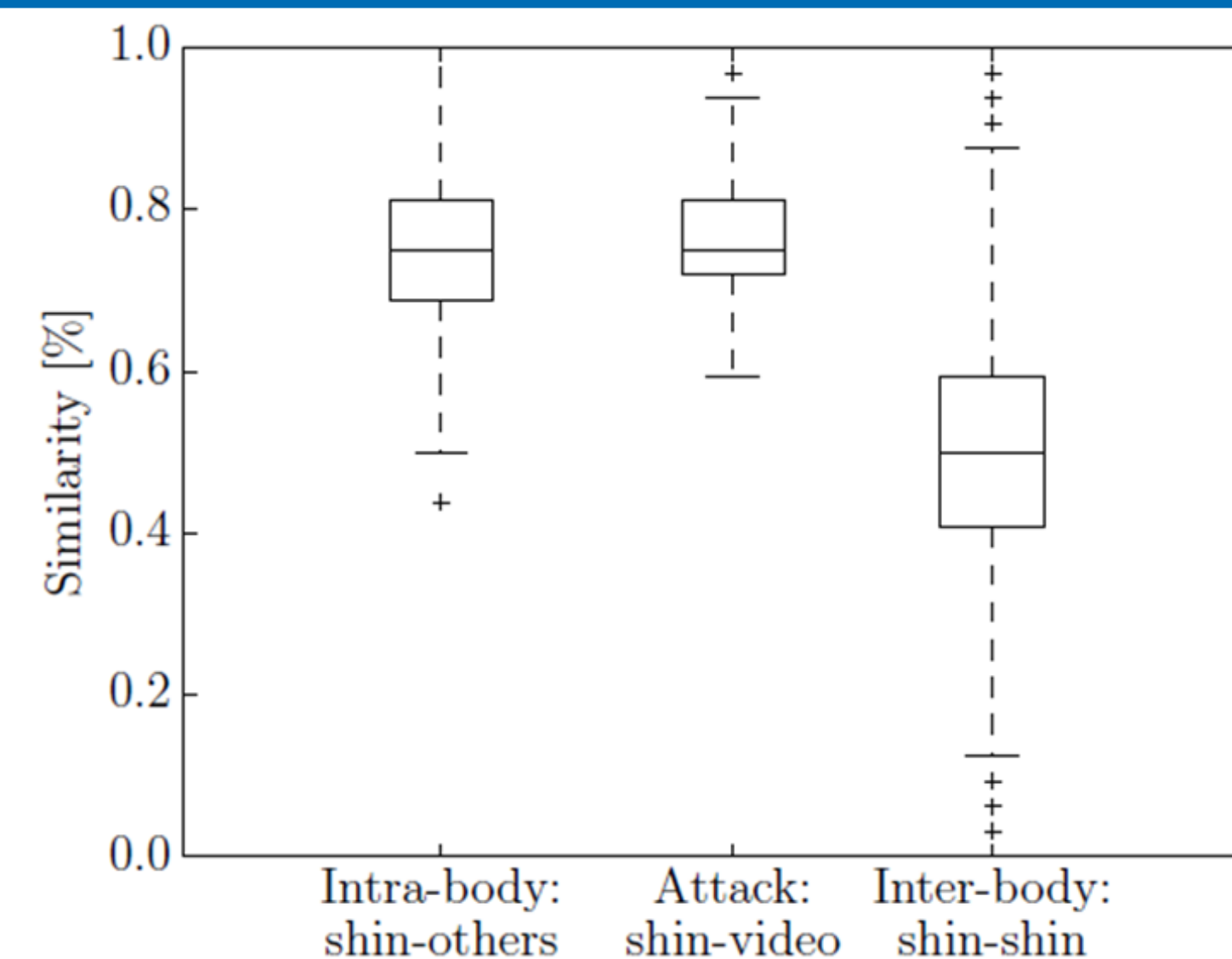
Evaluation

- Evaluating the similarity of gait fingerprints on public datasets: intra-body vs inter-body
- Proximate body parts achieve more similar fingerprints, e.g. arm – chest vs arm – shin



Security

- Gait fingerprints have high entropy: assessed by the **DieHarder** random number test suite
- Video-based attacks:
 - Using high-speed camera
 - Required **extensive manual effort** to estimate acceleration readings



Audio Pairing [TMC 2013]

Demo

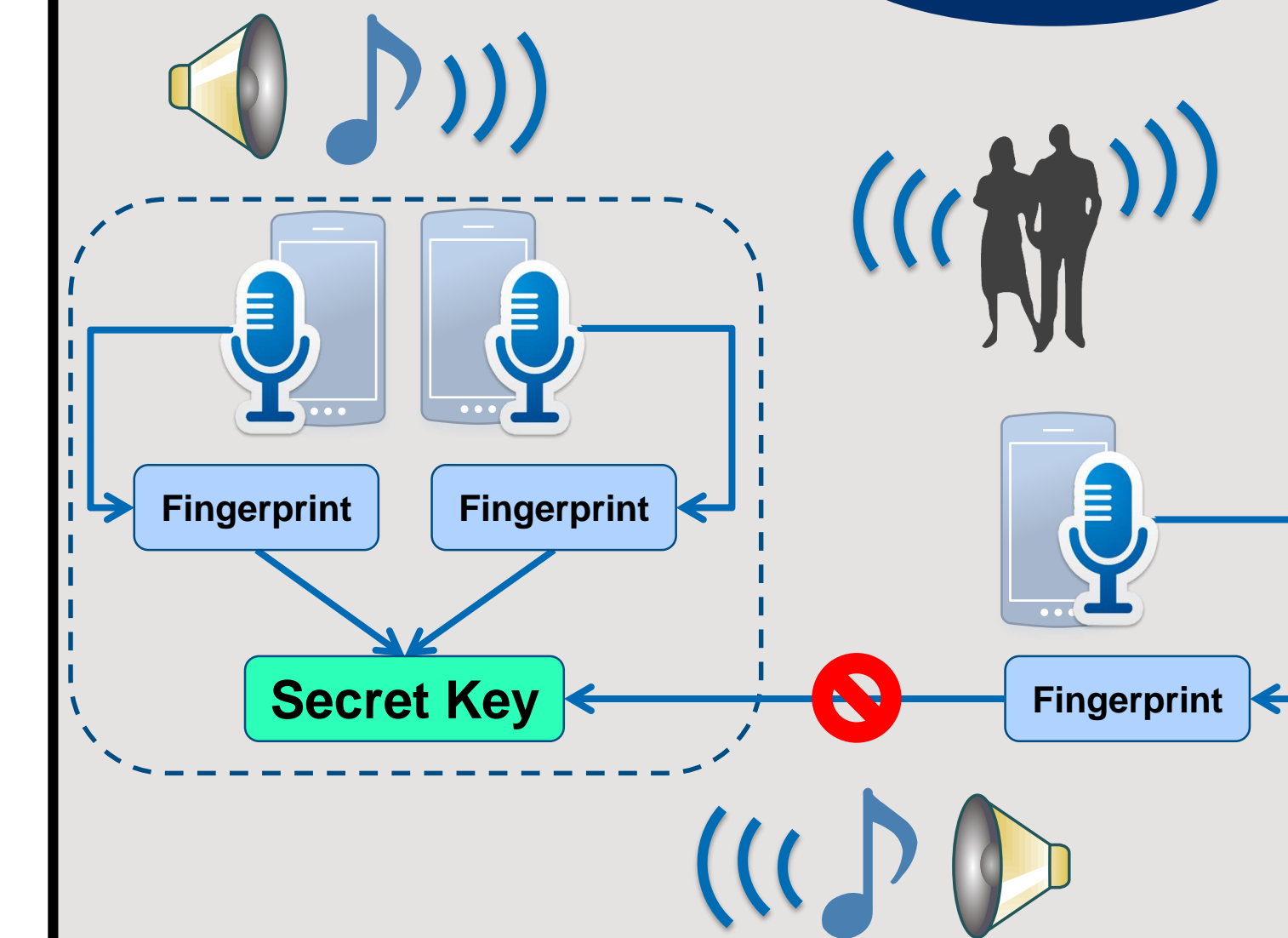


Image-based Passwords [PerCom 2017]

Demo



Ambient Intelligence Group
<http://ambientintelligence.aalto.fi/>
Stephan.Sigg@aalto.fi
Le.Ngu.Nguyen@aalto.fi