

## **REPLAY-MOBILE DATASET END USER LICENSE AGREEMENT**

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Research includes all type of scientific research, irrespective of the object under scrutiny, aimed at achieving a progress in science. This database was captured to develop the state-of-the-art in counter-measures for direct (spoofing) attacks to 2D facial recognition systems on mobile devices and so it may be used freely to this purpose. Other research uses of this database are encouraged. However, the End User must first obtain prior consent from the Licensor.

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All publications that report on research that use the Corpus will acknowledge this as follows: ***"(Portions of) the research in this paper used the Replay-Mobile Dataset made available by the Idiap Research Institute, Martigny, Switzerland. Such Corpus was captured in collaboration with the Galician R&D Center on Advanced Telecommunications (GRADIANT), Vigo, Spain."***

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Title / Function :	
Email :	
Date :	
Signature :	

## Schedule 1

### Description of the Corpus:

The Replay-Mobile Database for face spoofing consists of 1200 video clips of photo and video attack attempts to 40 clients, under different lighting conditions. This videos was recorded with current devices from the market, one was an iPad Mini3 and another the smartphone LG-G4. This Database was produced at the Idiap Research Institute (Switzerland) within the framework of collaboration with Galician Research and Development Center in Advanced Telecommunications Gradiant (Spain).

### **Database Description**

All videos are generated using a front-camera of mobile devices (tablet or mobile), real accesses was performed using the face of the genuine user, otherwise the attacks was performed trying to access displaying a photo or a video recording of the same client for at least 10 seconds. The front-camera produces colour videos with a high definition resolution of 720 pixels (width) by 1280 pixels (height) and saved into ".mov". The frame rate is about 25 Hz.

Real client accesses are taken under five different lighting conditions (controlled, adverse, direct, lateral and diffuse). In addition to produce the attacks, high-resolution photos and videos from each client were taken under similar conditions as in their authentication sessions (lighton, lightoff).

The 1200 real-accesses and attacks videos were then divided in the following way:

- **Training set:** contains 120 real-accesses and 192 attacks under different lighting conditions;
- **Test set:** contains 120 real-accesses and 192 attacks under different lighting conditions;
- **Development set:** contains 160 real-accesses and 256 attacks under different lighting conditions;
- **Enrollment set:** contains 80 real-accesses under different lighting conditions, to be used **\*\*exclusively\*\*** for studying the baseline performance of face recognition systems.

### **Attacks**

For photos attacks has been used a Nikon Coolpix P520 camera, which records 18 Mpixel photographs. Furthermore, videos attack was captured using the back-camera of a smartphone LG-G4, which records 1080p FHD video clips through its 16 Mpixel camera.

The way to perform the attacks can be divided into two subsets: the first subset is composed of videos generated using a matte screen to perform the attacks. For all of the attacks in this set was used a stand to hold capturing devices. In another way, for the second set was used print attacks. For "fixed" attacks, both devices was holder. On the other hand, for "hand" attacks, the spoofer holds the device with their own hands meanwhile the spoofer resource was immobile.

In total, 16 attack videos were registered for each client, 8 for each of the attacking modes just described

- 4 x mobile attacks using an Philips 227ELH screen (with resolution 1920x1080 pixels)
- 4 x tablet attacks using an Philips 227ELH screen (with resolution 1920x1080 pixels)
- 2 x mobile attacks using hard-copy print attacks fixed (produced on a Konica Minolta ineo+ 224e color laser printer) occupying the whole available printing surface on A4 paper
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- 2 x mobile attacks using hard-copy print attacks hand (produced on a Konica Minolta ineo+ 224e color laser printer) occupying the whole available printing surface on A4 paper
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