

Face Anti Spoofing

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Presentation by: Tan Minh Cao

- 1 Categories of face Presentation Attacks
- 2 The methods for Face Anti Spoofing

Categories of face Presentation Attacks

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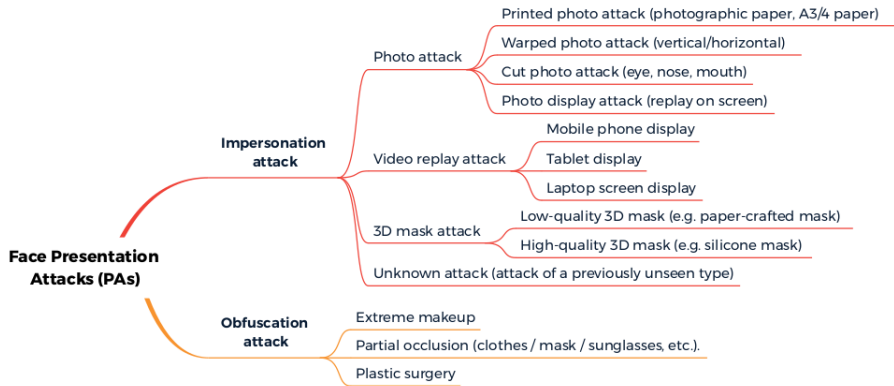


Figure: A typology of face Presentation Attacks (PAs)

The methods for Face Anti Spoofing

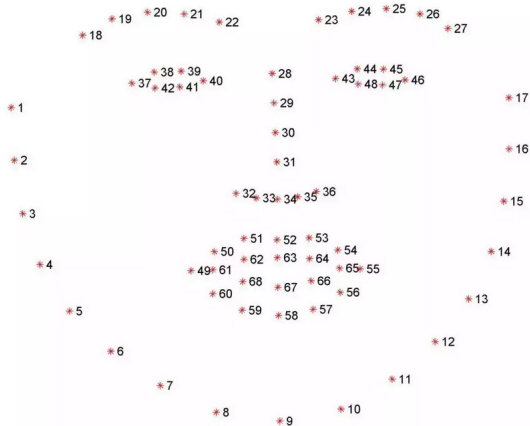
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- 1 Liveness cue-based methods
- 2 Texture cue-based methods
- 3 3D geometric cue-based methods
- 4 Multiple cues-based methods
- 5 Methods using new trend

Liveness cue-based methods

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- 1 eye blinks
- 2 Head movement
- 3 Remote PhotoPlethysmoGraphy
- 4 ...



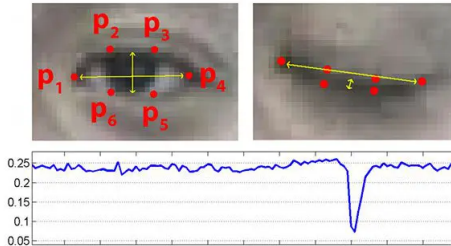


Figure: eye blinks

Advantages

- 1 Easy to deploy
- 2 User-friendly

Disadvantages

- 1 Hack by using video

$$\text{EAR} = \frac{\|p_2 - p_6\| + \|p_3 - p_5\|}{2\|p_1 - p_4\|}$$

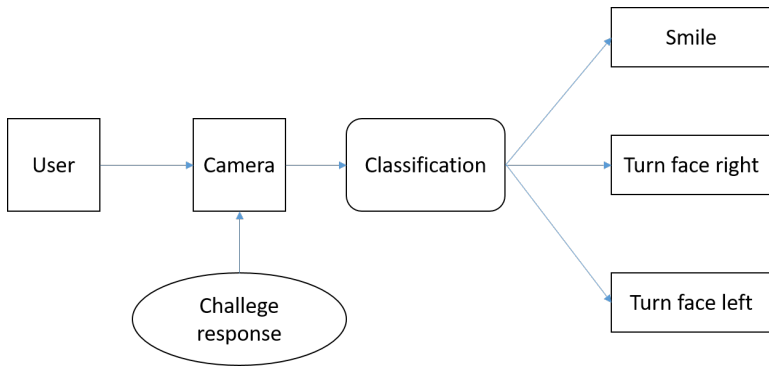


Figure: Challenge-Response

Advantages:

- 1 Easy to deploy
- 2 Can check attack by using video

Disadvantages: Users don't like this method



Figure: Challenge-Response

Local binary pattern

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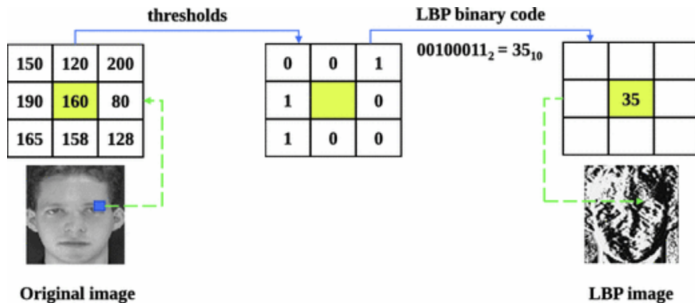


Figure: Challenge-Response

Disadvantages:

- 1 low accuracy
- 2 noise

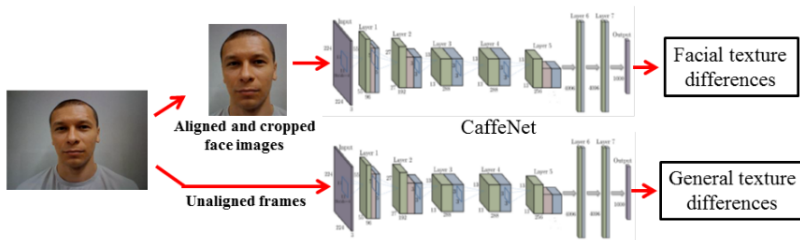


Figure: Alexnet Face

Dataset:

- 1 Dataset CelebA
- 2 Large Crowdcollcted Face Anti-Spoofing

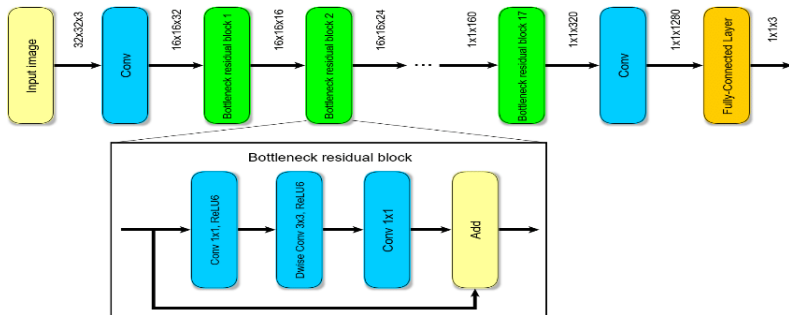


Figure: Mobilenet V2

Advantages:

- 1 Easy deploy
- 2 The accuracy is better LBP

Disadvantages:

- 1 Overfit
- 2 Dataset

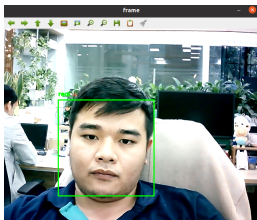


Figure: real

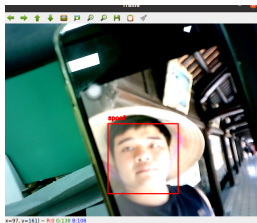


Figure: fake

Detection object for FAS

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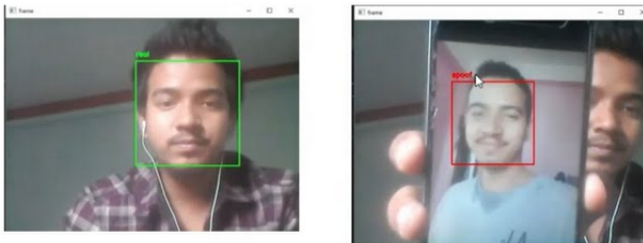


Figure: Detection object

- 1 Detection: Mobile, image,..
- 2 Detection: Face

Fake



Real



Figure: The image real/fake with flash

Advantages: The user don't like the flash.

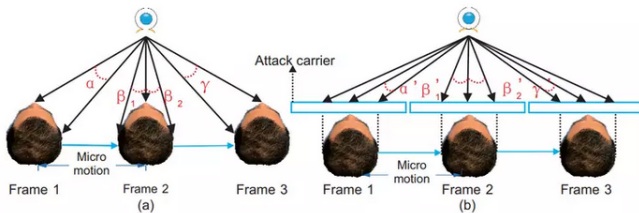


Figure: 3D map

Face anti spoofing for M6 devices

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Using Mobilenet V2

- 1 Tranfer learning model
- 2 Retrain with the new Dataset

Using Eye Blinks

- 1 Using face landmarks 68 point