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## Live Face Detection with Face Recognition Technology

Recently face recognition programs on smart devices have been getting more attention due to ease of use and quick secure access to programs and features. Even now Android phones using “Ice Cream Sandwich” provide ‘Face-Unlock’ instead of password, pin or pattern to secure personal privacy.

Although face recognition has many advantages, the concern against “Fake Face Attacks” is highly warranted. Face recognition systems cannot be practically used without proper countermeasures to this threat. Even when compared to a fingerprint, a face can be more easily imitated using printed papers and LCD-displays. There have been many attempts to overcome this issue: hardware-dependent approaches such as facial thermogram, facial vein and 3D depth information require incredibly expensive hardware making it not feasible for practical use and conventional algorithm-based methods using 2D images, which up to now, have not been accurate and required exhaustive calculations/computing power.

Suprema’s ‘Live Face Detection’ technology combines cutting-edge technology with advanced proprietary algorithms. A dual camera system captures both visible and IR images which are then processed using advanced image analysis techniques and intelligent machine learning based classifiers. A fake face is detected by estimating specific features and their distribution compared with reference models of real faces.

Suprema’s ‘Live Face Detection’ technology provides countermeasures for “Fake Face” threats as well as maintains its superior accuracy and speed making it the ideal product for practical access control and time & attendance use.







|   |   | Dual Camera System   |                 |
|---|---|--|-----------------|
|   |   | Visible Image  | Infra-red Image |
|  Fake face |  |  |                 |
|  Live face |  |  |                 |

Figure 1. Differences between IR and visible images in eye region

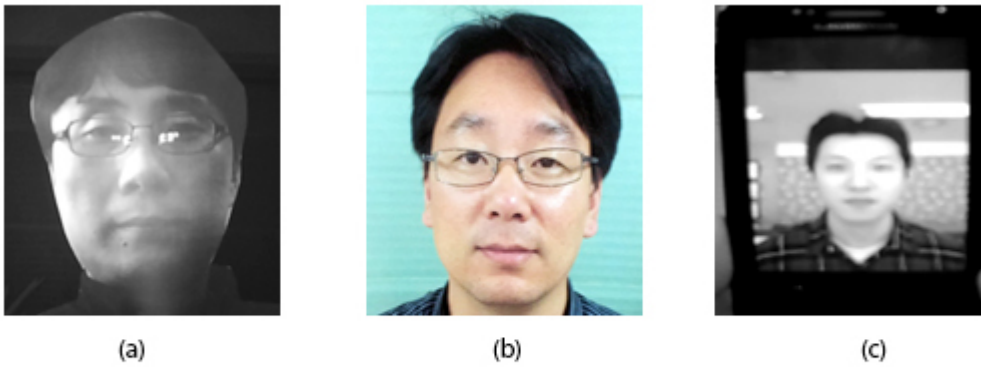


Figure 2. Examples of fake faces.

(a), (b) Printed fake face on paper  
(c) Fake face displayed on LCD

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