

Biometric Consortium 2004 Conference

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Topic: Methods of Fingerprint Spoof Detection Using Multispectral Imaging

Abstract: We are investigating the feasibility and characteristics of a multispectral imaging sensor that can be incorporated with an optical fingerprint reader to provide a strong means of spoof detection. Such a multispectral sensor can detect various aspects of the finger that are distinct to living human tissue and thereby discriminate against attempts to spoof a fingerprint sensor. The aspects detected include the overall spectral qualities of skin, the distribution of blood and blood vessels within the skin, and the presence and characteristics of the fingerprint pattern as a function of illumination wavelength.

Unlike a conventional optical fingerprint sensor based on frustrated total internal reflectance (FTIR), the multispectral sensor is configured to illuminate and detect the finger at angles close to normal to the platen surface. In this way, illumination light has the ability to pass into the skin and the resulting pattern of the light diffusely reflected from the skin can be imaged onto an appropriate detector array.

Several common optical fingerprint sensors have an optical configuration that allows a multispectral image to be collected through the same prism as used for the FTIR image. Furthermore, the multispectral image can be taken close in time with the conventional optical fingerprint image. This set of circumstances leads to a biometric sensor configuration that can provide tightly coupled spoof detection capability while requiring no additional user actions or significant sampling delays.

This talk will include a review of the motivation and basis for multispectral spoof detection, and a description of the instrumentation and test results achieved to date.

Biography: Rob Rowe co-founded Lumidigm in July of 2001 and now works with a very talented team of scientists and engineers to develop novel biometric solutions that are based on the optical properties of skin. Lumidigm was formed as a spin-out from InLight Solutions, a company developing optical instrumentation for measuring glucose and other medically important substances. Rob held a variety of technical and managerial positions with InLight Solutions prior to starting Lumidigm. Earlier in his career, Rob held technical positions with companies in the US and Europe including Leica, General Motors and Sandia National Laboratories. He is a coinventor on 5 issued patents, with numerous others pending. He has a Ph.D. in Optics from the University of Arizona and a B.S. in mechanical engineering from Kettering University.