Extracting Subsurface Fingerprints using Optical Coherence Tomography

Sharat Saurabh Akhoury, Luke Nicholas Darlow
Modelling and Digital Science, Council for Scientific and Industrial Research, Pretoria, South Africa

Abstract

Physiologists have found that fingerprint patterns exist in the inner layers (viz. papillary junction) of the skin of the fingertip. However, conventional acquisition systems do not have capabilities to extract fingerprints at subsurface layers of the finger for use in identity authentication. The subsurface fingerprint representation is of a higher quality than the surface representation as it does not contain deformations such as creases or scars which may be present on the surface of the fingertip. This paper presents a novel approach to extract the subsurface fingerprint representation using a high-resolution imaging technology known as Optical Coherence Tomography (OCT).