Complexity and Distortion Analysis on Methods for Unrolling 3D to 2D Fingerprints

CYNTHIA STHEMEBILE MALMBO AND YASEEN MOOLLA

Council for Scientific and Industrial Research

Information Security

Pretoria, South Africa

SMlambo@csir.co.za and YMoolla@csir.co.za

Abstract-- Fingerprint recognition systems have important applications for privacy and security. This has led to more studies and technologies that improve on the security and accuracy of fingerprint identification and verification systems. Such improvements and studies involve the application of three-dimensional (3D) fingerprint systems, where the details of the finger are captured using 3D technologies and the captured 3D fingerprints are converted into two-dimensional (2D) fingerprints. This paper presents a brief survey on different methods that are used to unwrap 3D fingerprint images into 2D fingerprint images, compare them on the effects of distortion and analyses two promising methods. The aim of this survey is to investigate complexity and properties of non-parametric methods so that they can be easily applied on different fingerprint identification and verification systems.