Comprehensive Review of Fingerprint Based Biometric Systems

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Abstract: *Biometric systems are increasingly replacing traditional password and token based authentication systems. Security and recognition accuracy are the two most important aspects to consider in designing a biometric system. In this paper, a comprehensive review is presented to shed light on the latest developments in the study of fingerprint-based biometrics covering these two aspects with a view to improving system security and recognition accuracy. Based on a thorough analysis and discussion, limitations of existing research work are outlined and suggestions for future work are provided. The two most critical attacks to biometric systems, namely, attacks to the user interface and template databases are discussed here. How to design proper countermeasures to thwart these attacks, thereby providing strong security and yet at the same time maintaining high recognition accuracy, is the research topic in the foreseeable future. Moreover, recognition accuracy under non-ideal conditions is more likely to be unsatisfactory and thus needs particular attention in biometric system design.*

Keywords: biometrics; security; protection; recognition accuracy; fingerprint