An Approach to Fingerprint Image Enhancement and Post-processing Technique

Abstract

Minutiae extraction for automatic fingerprint identification system is one of the most important steps. However, the performance of minutiae extraction relies heavily on an enhancement algorithm. The presence of noise in poor-quality images causes a large number of extraction errors, including the dropping of minutiae identification error. A study on these errors reveals that post-processing is an effective tool to advantageously recognize true minutiae. In this paper, we present a novel fingerprint image post-processing algorithm. This algorithm is designed and developed to beneficially implemented in fingerprint recognition system. The developed algorithm employ several rules, which are generalized through a study on the errors that commonly occur in minutiae extraction and their effects on the overall verification performance. Thorough experimental tests were conducted and results demonstrate that the proposed post-processing algorithm is both effective and efficient, hence, open the way for its implementation in wider applications.

Index Terms- Enhancement, Fingerprint, Post-processing.