

Universiti Teknologi MARA

**Fingerprint Verification Using Clonal
Selection Algorithm**

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ABSTRACT

Fingerprint verification has drawn a lot of attention on its approach in biometric since it is one of the most important biometric technologies nowadays and it is widely used in several different applications and areas. It is applied in the forensic science area in order to identify the people that are involved in the criminal scenes such as the victims and the suspects. A human's fingerprint is unique and usually has its own patterns and ridges, which differs them from others' fingerprints. However, there are some drawbacks that can cause low accuracy and low performance of the verification when the fingerprint images used are of low-quality causing some of the important details to be missing or hard to trace. Therefore, the aim for this project is to develop a new approach in the fingerprint verification system by applying Clonal Selection Algorithm (CSA) that is known to be good in pattern matching and optimization of problems. There will be two processes involved, which are feature extraction using minutiae-based method and also the implementation of the proposed algorithm, CSA. The results of False Matching Ratio (FMR) was 16.67% whilst the False Non-Matching Ratio (FNMR) was 33.33%. However, different number of generations applied in CSA will give different result of the verification process. Further studies can be made by using the same algorithm, but focusing more on the image enhancement and the feature extraction methods to improve the quality of the extraction of fingerprints.

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