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## Fingerprint template protection scheme, security and vulnerabilities: A survey

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The recent implementation of biometrics solutions for user authentication in public or private networks has caused great concern about the safety and privacy of biometric data. Different vulnerabilities detected on automated fingerprint identification systems could reveal minutiae templates if they are in plain text. In order to solve this security issue several fingerprint minutiae template protection models have been proposed, among which there are the fuzzy vault and cancelable fingerprint templates. In order to protect biometric data, an efficient process is necessary to meet three basic requirements: Cryptographic security, revocability and performance; however, most of the models described to date fail in this task. The fingerprint minutiae template protection scheme must capture as much identifying information of the fingerprint and solve the problem of the template alignment before the comparison process is executed in the protected domain. A study on the fingerprint minutiae template protection models, their main strengths, weaknesses and vulnerabilities was conducted in this work. Emphasis was placed on existing algorithms for aligning protected templates, highlighting the weaknesses of each one. Analyzing the types of attacks described in the bibliography to obtain the original biometric data from protected templates and the security provided for the fuzzy vault and non-invertible template protection models currently proposed is the main objective of this research. As a result, the necessary knowledge to design a minutiae template protection model that is free from alignment and the vulnerabilities present in current models is obtained.

### Biography

Ramón Santana Fernández, PhD student, graduated as Engineer in Informatics Sciences in the University of Informatics Science in 2011. He was a Researcher in the Biometrics field with 6 years of experience began as Researcher Assistant in 3rd year of the career in Dactilab project in the 2009. He has worked as student and as worker in the biometric software development and process research, obtaining awards for his participation on investigations and software development in the field of automatic fingerprint identification systems at the Identification and Digital security Center. He has published articles in journals and events at the University of the Informatics Science.

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