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Discriminative binary feature learning and quantization in biometric key generation

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Highlights

- We develop an efficient unified framework for generating stable, robust and secure cryptography keys based on facial features, without the need to save information related to facial features in the database.
- The facial features are extracted using a proposed equalized local binary pattern which showed promising results when simulated on standard face databases.
- To cater for variations and provide flexibility in error tolerance, we propose a quantization scheme which not only cater for the variations, it also aided in providing security and reducing the size of the features.
- A secure key generation mechanism is developed based on the facial features in which keys can be periodically updated.
- The robustness and security of the generated keys are evaluated on a set of standard statistical tests comprising of three requirements: randomness, weak biometric privacy and strong biometric privacy.

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