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Summary: Aiming at the problems of low accuracy and poor security performance of the existing fingerprint template protection algorithm, a fingerprint template protection algorithm based on bit string XOR and scrambling transformation is proposed. Based on the existing two-dimensional mapping algorithm, the algorithm performs XOR and random index scrambling transformation on the obtained bit string. The algorithm effectively combines linear and nonlinear transformations, thereby expanding the key space and enhancing the security of the fingerprint template. Theoretical analysis and simulation results show that for the key leakage scenario, the equal error rate of the algorithm in the database FVC2002 DB1, DB2 is 0.08 % and 0.75 %, respectively. Compared with the existing methods, it has better accuracy and security.

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fingerprint template; security; bit string; XOR; scrambling

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