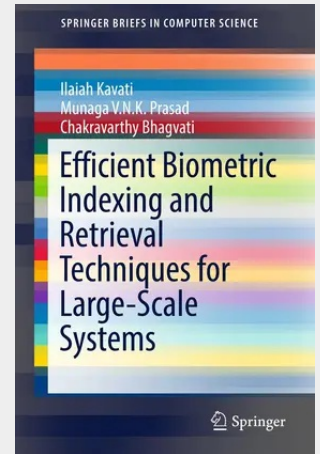


Efficient Biometric Indexing and Retrieval Techniques for Large-Scale Systems

This work presents a review of different indexing techniques designed to enhance the speed and efficiency of searches over large biometric databases. The coverage includes an extended Delaunay triangulation-based approach for fingerprint biometrics, involving a classification based on the type of minutiae at the vertices of each triangle. This classification is demonstrated to provide improved partitioning of the database, leading to a significant decrease in the number of potential matches during identification. This discussion is then followed by a description of a second indexing technique, which sorts biometric images based on match scores calculated against a set of pre-selected sample images, resulting in a rapid search regardless of the size of the database. The text also examines a novel clustering-based approach to indexing with decision-level fusion, using an adaptive clustering algorithm to compute a set of clusters represented by a 'leader' image, and then determining the index code from the set of leaders. This is shown to improve identification performance while using minimal resources.

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