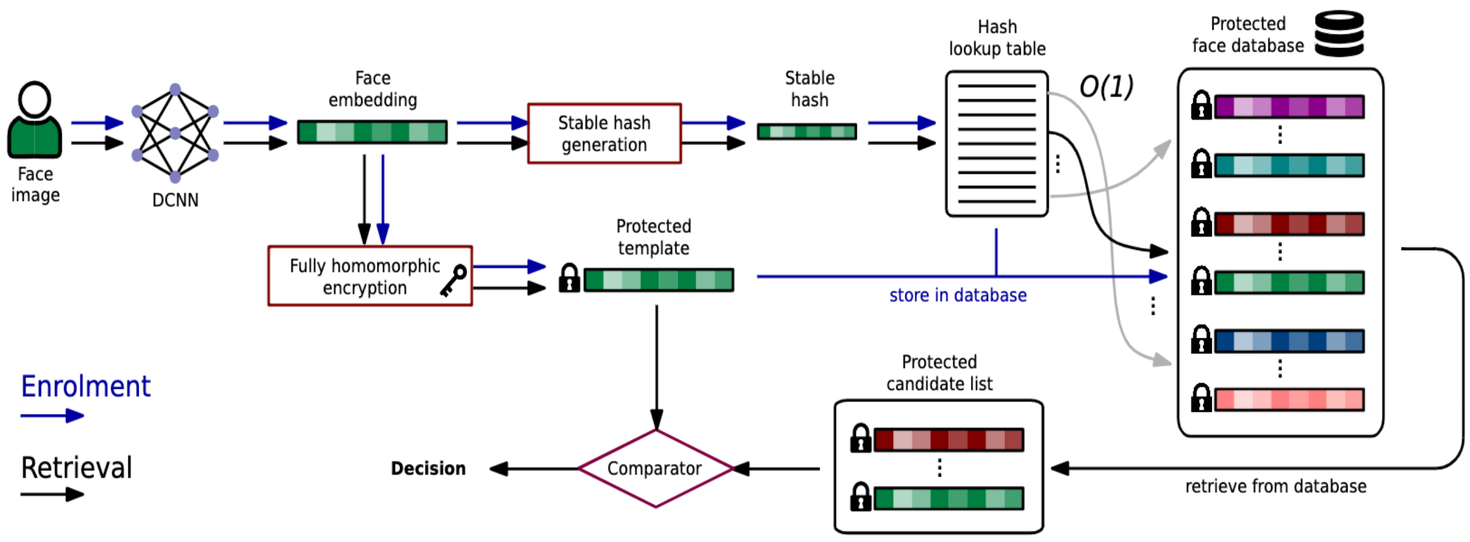
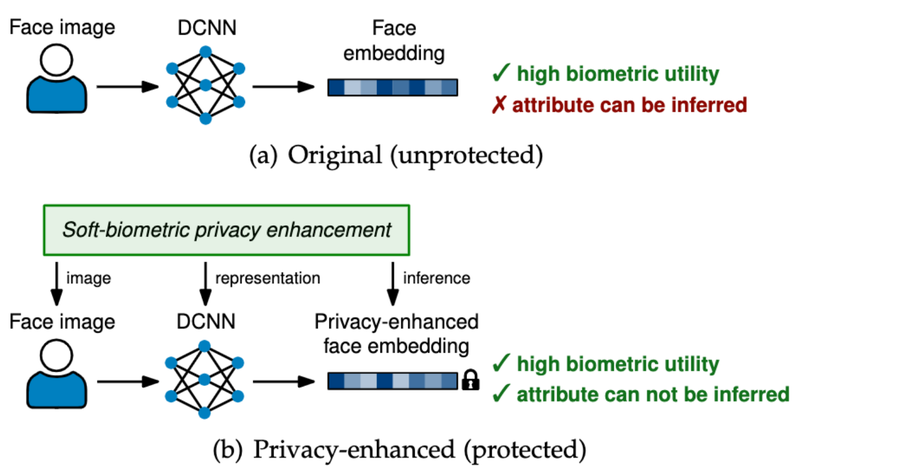
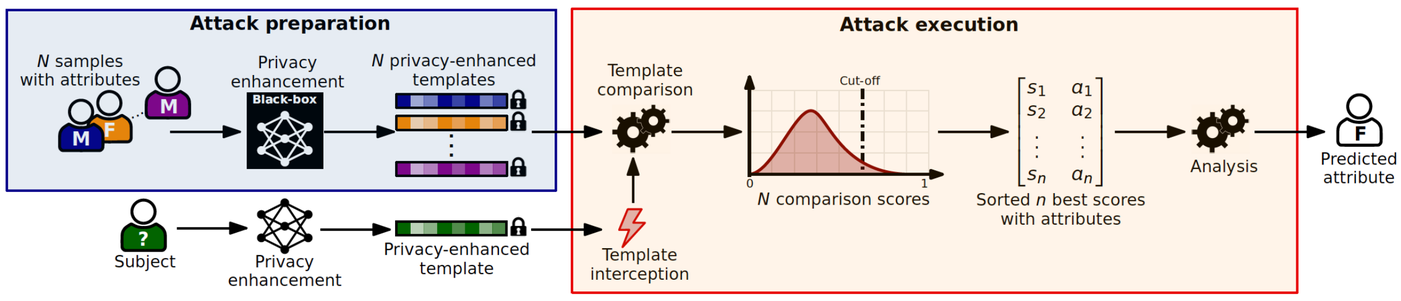
Privacy-preserving indexing of large-scale biometric databases





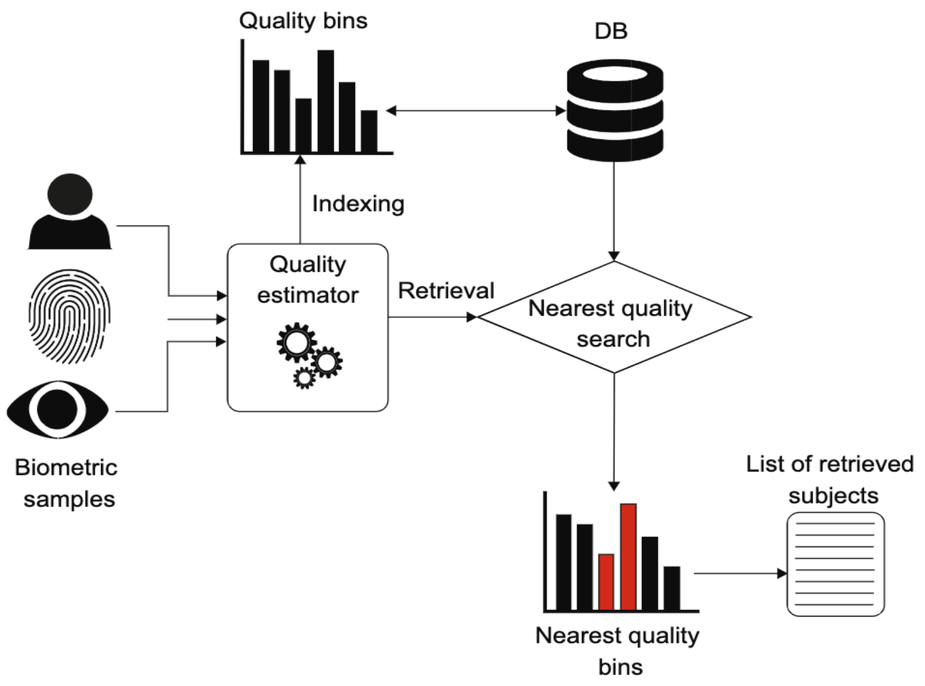
Fully Homomorphic Encryption

- Privacy-preserving face identification system for indexing and retrieval of protected face templates[1].
- Stable face hashes through the Product Quantisation-based look-up table are analysed.
- Workload reduction down to 0.1% of a baseline approach (exhaustive search).



Attack on Soft-biometric PETS

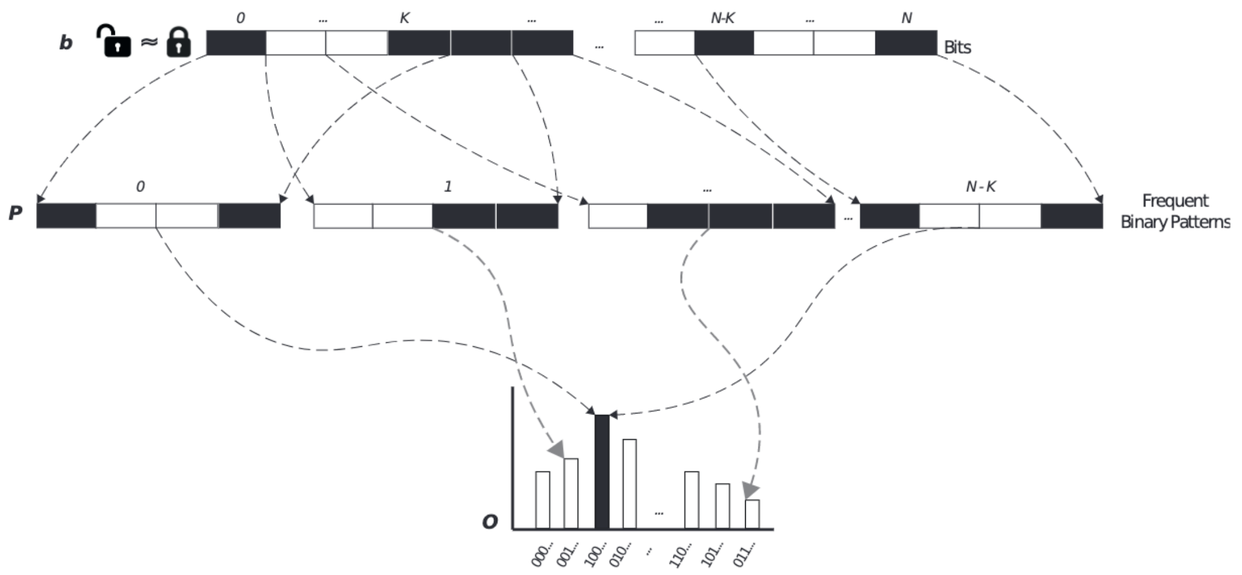
- Effects of broad homogeneity and demographic differential in face recognition.
- Unknown attribute is inferred from the attributes associated with the highest obtained similarity scores.
- Classification on gender with an accuracy of up to approximately 90% [3].



Quality Scores for indexing

- Indexing schemes can take advantage of the inherently more stable properties derived from the biometric character [2].
- Application on Face, Iris, and Fingerprint.
- Workload-reduction down to 38% for face, 31% for iris, and 29% for fingerprint.

Generic and multi-biometric indexing scheme



[1] Dailé Osorio-Roig, Christian Rathgeb, Pawel Drozdowski, Christoph Busch, “Stable Hash Generation for Efficient Prvacy-Preserving Face Identification”, in Transactions on Biometrics, Behavior, and identity Science (TBIOM), July 2021.

[2] D.Osorio-Roig, T.Schlett, C.Rathgeb, J.Tapia, C.Busch “Exploring Quality Scores for Workload Reduction in Biometric Identification”, International Workshop on Biometrics and Forensics (IWBF), Salzburg, Austria,2022.

[3] Osorio-Roig D, Rathgeb C, Drozdowski P, Terhörst P, Štruc V, Busch C. An Attack on Facial Soft-biometric Privacy Enhancement. IEEE Transactions on Biometrics, Behavior, and Identity Science. 2022 May 9.

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