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Quality-Aware Binary Face Templates for Reliable On-Device Verification Under Capture Variations

Communication Info

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Abstract

Compact binary face templates enable fast, memory-efficient face verification on constrained devices, but performance can degrade under capture variations (blur, pose, illumination) and session changes. Building on our prior work on bit stability and lightweight on-device verification, we propose a quality-aware pipeline that predicts template unreliability before matching and adapts the decision process accordingly [1], [2]. The method derives a compact set of face-quality indicators to trigger re-capture when quality is insufficient (quality gating) and to perform stability-aware matching by reducing the influence of unstable bits [3]. The approach targets practical edge deployments with strict latency and memory budgets, while preserving privacy by keeping templates local and returning only final decisions [4]. Planned evaluation will report EER/AUC together with stability measures (flip rate, stable-bit fraction) on standard benchmarks with controlled degradations [5].

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