

Latent Fingerprint Matching using Descriptor based Hough - Transform

ABSTRACT

Identifying suspects based on impressions of fingers lifted from crime scenes (latent prints) is a routine procedure that is extremely important to forensics and law enforcement agencies. Latents are partial fingerprints that are usually smudgy, with small area and containing large distortion. Due to these characteristics, latents have a significantly smaller number of minutiae points compared to full (rolled or plain) fingerprints. The small number of minutiae and the noise characteristic of latents make it extremely difficult to automatically match latents to their mated full prints that are stored in law enforcement databases. Although a number of algorithms for matching full-to-full fingerprints have been published in the literature, they do not perform well on the latent-to-full matching problem. Further, they often rely on features that are not easy to extract from poor quality latents. In this paper, we propose a new fingerprint matching algorithm which is especially designed for matching latents. The proposed algorithm uses a robust alignment algorithm descriptor-based hough transform to align fingerprints and measures similarity between fingerprints by considering both minutiae and orientation field information.