

An enhanced representation of thermal faces for improving local appearance-based face recognition

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Abstract

This paper proposes a new methodology to improve appearance-based thermal face recognition methods by using an enhanced representation of the thermal face information. This new representation is obtained by combining the pixels of the thermal face image and the vascular network information that is extracted from the same thermal face image. The effect of using the enhanced representation is evaluated for 5 different face recognition methods (LBP, WLD, GABOR, SIFT, SURF) in two public thermal face databases (Equinox and UCHThermalFace). The experimental results show that the proposed enhanced representation improves the performance of most of the analyzed appearance-based methods. The largest improvements are obtained when this representation is used together with methods based on the Gabor Jet Descriptor (GJD), the Weber Linear Discriminant (WLD) and Speeded Up Robust Features (SURF). In general terms the improvement is larger in indoor setups than in outdoors.

Palabras clave

Palabras clave de autor: [Face recognition](#); [thermal face recognition](#); [unconstrained environments](#); [vascular network](#)

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