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خلاصه مقاله:

Facial images are the most popular biometrics in automated identification systems. Different methods have been introduced to evaluate the quality of these images. FICV is a common benchmark to evaluate facial images quality using ISO / ICAO compliancy assessment algorithms. In this work, a new model has been introduced based on brain functionality for Facial Image Quality Assessment, using Face Image ISO Compliance Verification (FICV) benchmark. We have used the Hierarchical Max-pooling (HMAX) model for brain functionality simulation and evaluated its performance. Based on the accuracy of compliancy verification, Equal Error Rate of ICAO requirements, has been classified and from those with higher error rate in the past researches, nine ICAO requirements have been used to assess the compliancy of the face images quality to the standard. To evaluate the quality of facial images, first, image patches were generated for key and non-key face components by using Viola-Jones algorithm. For simulating the brain function, HMAX method has been applied to these patches. In the HMAX model, a multi-resolution spatial pooling has been used, which encodes local and public spatial information for generating image discriminative signatures. In the proposed model, the way of storing and fetching information is similar to the function of the brain. For training and testing the model, AR and PUT databases were used. The results has been evaluated by FICV assessment factors, showing lower Equal Error Rate and rejection rate, compared to the existing methods.

کلمات کلیدی:

Facial Images Quality; ISO/IEC۱۹۷۹۴ Standard; ICAO; FICV; HMAX Model

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