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Topic: Quality Assessment of Facial Images

Abstract: Quality assessment of facial images differs from the traditional quality assessment of image and video signals with regards to its multiple goals such as to ensure its fidelity to the human visual system (HVS) model, to predict matching performance, to generate feedback on image acquisition, to guard the enrollment process, and to provide a weight for merging multimodal biometrics. In this paper, we present a quality assessment framework that complies with the requirements of ISO/IEC 19794-5 for facial biometrics and additionally ensures optimal recognition performance. This framework employs a novel classification-based score normalization process for various quality metrics and includes techniques to fuse those individual quality scores into an overall quality score which is shown to be correlated to the genuine match scores of the FaceIt face recognition engine. We confirm the effectiveness of this overall quality score at satisfying multiple goals by first parameterizing ROC curves with average database quality to show the predictive nature of the metric and secondly by showing the consistency between this overall quality score and human perception of image quality.

Biography: Rein-Lien Hsu received the BSEE and MSEE degrees in electrical engineering from the National Cheng Kung University, Tainan, Taiwan, in 1990 and 1992, respectively, and the PhD degree in computer science and engineering from the Michigan State University in 2002. He is currently a senior principal research scientist at Identix Inc., Jersey City, New Jersey. He specializes in the detection, modeling, and recognition of human faces, and 3D object reconstruction. His research interests include pattern recognition, signal and image processing, and computer vision. As an Identix researcher for the last four years, he has conducted research in feature shape based face recognition, localization and alignment of 2.5D facial features, surface texture analysis, local feature analysis, the search of optimal views for pose enrollment, pose classification, and the automatic 2D-to-3D construction of the face model. He has developed the first Identix open source library for JPEG Region of Interest compression, called Identix JROI library. His current research focuses on image quality assessment and restoration for face identification as well as fingerprint authentication. He is a member of the IEEE and the IEEE Computer Society.