

AN EVALUATION OF MULTI-MODAL BIOMETRIC FUSION APPROACHES

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Unimodal Biometric systems are encountered significant problems to detecting noisy data, spoof attacks and unacceptable error rates. Some of limitations associated with biometric systems which use one modality for user authentication can be surmounted by augmenting any of number of traits, sensors or feature sets so that a better acceptance rate can be achieved and limitation considered with the noisy data is less critical. In this paper we use a variety of modalities including two physiological and two behavioural biometric for user authentication. We coordinated the collection of fingerprints, handwriting samples, voice samples and facial images from a large group of human subjects then we came up to choose the leading recognition algorithms for each modality. Here we choose to use Gabor features for fingerprints, Gray Level Co-occurrence Matrices (GLCM) for handwriting, Mel Frequency Cepstral Coefficient (MFCC) features for voice, and the eigenface approach for facial images. Finally we conduct a series of experiments to evaluate the authentication performance of each modality separately compared with the authentication performance of the combined modalities using a variety of fusion approaches, including decision trees, neural networks, linear discriminant analysis, nearest neighbour and Bayesian Classification.