

Comparison of accuracy performance based on normalization techniques for the features fusion of face and online signature

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ABSTRACT

Feature level fusion in multimodal biometrics system is able to produce higher accuracy compared to score level and decision level of fusion due to the richer information provided. Features from multi modalities are fused prior to a classification phase. In this paper, features from face (image based) and online signature (dynamic based) are extracted using Linear Discriminant Analysis (LDA). The aim of this research is to recognize an authorized person based on both features. Due to the different domain, the features of one modality might have dominant values that will superior in classification phase. Thus, that aim is unable to be achieved if the classification will rely more on one modality rather than both. To overcome the issue, features normalization is deployed to the extracted features prior to the fusion process. The normalization is performed to standardize the range of features value. A few normalization techniques have been focused in this paper, namely *min-max*, *z-score*, *double sigmoid function*, *tanh estimator*, *median absolute deviation (MAD)* and *decimal scaling*. From those techniques, which normalization technique is most applicable to this case is observed based on best accuracy performance of the system. After the classification phase, the highest accuracy is 98.32% that is obtained from the *decimal scaling* normalization. It shows that technique is able to give an outperform result compared to other techniques.

KEYWORDS

Feature fusion; Feature normalization; Mutimodal biometrics system

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