

Face Recognition and Authentication System

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Abstract

ABSTRACT - In this paper, we present an automatic Face Recognition and Authentication (FRAS) System. The proposed System consists of three main phases, namely, Pre-processing, Feature Extraction, and Classification and Authentication phases. We use ORL faces database in the experiments. The most significant contribution of this work is using three face recognition methods; the Eigenface, the Fisherface and color histogram. The Eigenface is the first method considered as a successful technique of face recognition. The Eigenface method uses (PCA) to linearly project the image space to a low dimensional feature space. The Fisherface method is an enhancement of the Eigenface method that it uses (LDA) for the dimensionality reduction. The LDA maximizes the ratio of between-class scatter to that of within-class scatter; therefore, it works better than PCA for the purpose of discrimination. The color histogram based methods have proved simplicity and usefulness. Its idea was based on Color Histogram Quantization with 256 gray levels and using 24 quantization levels. We also use two classification methods (KNN) and (SVM). The proposed system has attained accuracy of 100% using color histogram features with KNN classifier and 95% using color histogram feature with SVM for ORL faces database of 40 persons with 10 image faces for each person.

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