

Abstract

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A Multistage Hierarchical Algorithm for Hand Shape Recognition

This paper represents a multistage hierarchical algorithm for hand shape recognition using principal component analysis (PCA) as a dimensionality reduction and a feature extraction method. The paper discusses the effect of image blurring to build data manifolds using PCA and the different ways to construct these manifolds. In order to classify the hand shape of an incoming sign object and to be invariant to linear transformations like translation and rotation, a multistage hierarchical classifier structure is used. Computer generated images for different Irish Sign Language shapes are used in testing. Experimental results are given to show the accuracy and performance of the proposed algorithm.