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ABSTRACT

The Hand Gesture Recognition is an important component of the computer vision system and is of immense interest due to its application in tele presence, sign language, intelligent video surveillance system, human computer interaction, virtual reality, traffic control etc. Hand Gesture recognition system is a process involving classifying the given gesture of the hand portion. Our thesis gives a technique for the recognition of hand gesture from the 11 different static gestures taken from NUS hand posture dataset. The purpose of this thesis is to study and develop a method for the efficient detection and classification of hand gestures in the complex background. Hand gesture detection in complex background is seen as a challenging task. Skin similarity measure is used to detect the hand in complex background hand gesture image.

The whole of the image is divided into two classes one is hand and other is background. Then Otsu's threshold algorithm is used for the segmentation of hand gesture portion in gray scale image. Then the morphological image processing techniques are used to eliminate external and internal noise in the segmented image of the hand portion comprising the hand gesture. Gabor filter is used to find features which are then fed into PCA to get the reduced feature matrix. The features of the shape are obtained by the edges so determined by the canny edge detector. These extracted features are applied as input to classifier. Linear SVM classifier discriminates the images based on dissimilarity between two images. Experimental result shows that 94.6% recognition accuracy is achieved by using linear classifier.

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