



VISION BASED MULTI-FEATURE HAND GESTURE RECOGNITION FOR INDIAN SIGN LANGUAGE MANUAL SIGNS

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Abstract- Indian sign language (ISL) is the main communication medium among deaf Indians. An ISL vocabulary show that the hand plays a significant role in ISL. ISL includes static and dynamic hand gesture recognition. The main aim of this paper is to present multi-feature static hand gesture recognition for alphabets and numbers. Here, comparative analysis of various feature descriptors such as chain code, shape matrix, Fourier descriptor, 7 Hu moments, and boundary moments is done. Multi-feature fusion descriptor is designed using contour (Boundary moments, Fourier descriptor) and region based (7Hu moments) descriptors. Analysis of this new multi-feature descriptor is done in comparison with other individual descriptors and it showed noteworthy results over other descriptors. Three classification methods such as, Nearest Mean Classifier (NMC), k-Nearest Neighborhood (k-NN) and Naive Bayes classifier are used for classification and comparison. New Multi-feature fusion descriptor shows high recognition rate of 99.61% among all with k-NN. Real time recognition for number signs 0-9, of fusion descriptor with NMC gave 100% accuracy.

Index terms: Indian sign language interpretation, k-nearest neighborhood classifier, nearest mean Classifier, Boundary moments, Fourier descriptor, 7 Hu moments, Chain code, Shape matrix, Naive Bayes.