Abstract

Visual interpretation of sign language gesture can be useful in accomplishing natural human robot interaction. This paper describes a sign language gesture based recognition, interpreting and imitation learning system using Indian Sign Language for performing Human Robot Interaction in real time. It permits us to construct a convenient sign language gesture based communication with humanoid robot. The classification, recognition, learning, interpretation process is carried out by extracting the features from Indian sign language (ISL) gestures. Chain code and fisher score is considered as a feature vector for classification and recognition process. It is to be done by the two statistical approaches namely known as Hidden Markov Model (HMM) technique and feed forward back propagation neural network (FNN) in order to achieve satisfactory recognition accuracy. The sensitivity, specificity and accuracy were found to be equal 98.60%, 97.64% and 97.52% respectively. It can be concluded that FNN gives fast and accurate recognition and it works as promising tool for recognition and interpretation of sign language gesture for human computer interaction. The overall accuracy of recognition and interpretation of the proposed system is 95.34%. Thus, this approach is suitable for automated real time human computer interaction tool.


Recognizing and Interpreting Sign Language Gesture for Human Robot Interaction

- Face detection in complicated backgrounds and different illumination conditions by using YCbCr color space and neural network Pattern Recognition Letters, Volume 28, and Issue 16, 1 December 2007, Pages 2190-2200.

Index Terms

Computer Science

Pattern Recognition

Keywords

HRI  ISL  CLAHE  Chain Code  HMM  Fisher Score  FNN  Gesture recognizing

Gesture Interpretation