

Moving vehicle detection using time domain statistical features

Abstract

The Hearing Impaired People (HIP) cannot distinguish the sound from a moving vehicle approaching from their behind. Since, it is difficult for hearing impaired to hear and judge sound information and they often encounter risky situations while they are in outdoor. If HIPs can successfully get sound information through some machine interface, dangerous situation will be avoided. Generally the profoundly deaf people do not use any hearing aid which does not provide any benefit. This paper presents, simple statistical features are used to classify the vehicle type and its distance based on sound signature recorded from the moving vehicles. An experimental protocol is designed to record the vehicle sound under different environment conditions and also at different speed of vehicles. Basic statistical features such as the standard deviation, Skewness, Kurtosis and frame energy have been used to extract the features. Probabilistic neural network (PNN) models are developed to classify the vehicle type and its distance. The effectiveness of the network is validated through stimulation.

Keywords; Hearing Impaired, Probabilistic Neural Network (PNN), Statistical Features