

M. Anandan, M. Manikandan, T. Karthick

Abstract

This paper focuses on providing the helping aid for the visually impaired person with an object detection and navigation system. The proposed module is divided into two, one is static object detection which uses Threshold value matching, SURF feature extraction for obstacle matching and Bivariate gaussian mixture model for high dimensional bivariate features extracted and later to convert the obtained visual information into the audio information using a raspberry-pi setup. Secondly the system deals with the dynamic obstacles too for which employs Gaussian mixture distribution in modeling background of each pixel and an on-line approximation to update the model. The moving human region is detected by background subtraction. The shadow detection and elimination are implemented in the HSV space, and finally morphological operations are introduced to eliminate noise and reconstruct moving human regions. The results show that the method models stable background, eliminates shadow, and has a good detection result. This algorithm detects the shape of the object and searches from the database provided in the hardware and converts the textual information to an audio information. The audio information is given in-terms of a vibration which protects the eardrum and also helps as a hearing aid for the partial hearing loss people. This prototype provides the blind people to navigate in a free environment.

