

ABSTRACT

Falling is an accident that known as a major health risk to cause injuries. The risk for serious injuries is increase when a person remains unconscious or immobilized and cannot call for help after falling. Fall detection devices can help to limit the major health risk because of falling by reducing the time between the fall and the arrival of aid, increasing the likelihood of successful treatment.

Fall detection system in this study aim to design a system that use image processing to detect a fall in three-stage, video acquisition, feature extraction and fall detection. Video acquisition is done using the fall detection dataset. In the second stage, image processing is used for feature extraction using Gaussian Mixture Model for object segmentation, ellipse model to determine the orientation, Motion History Image to calculate the motion coefficient and Support Vector Machine as the classification method.

System performance analysis is carried out in several factors, namely the appropriate type of SVM, the position of the camera used and high accuracy. Based on these factors, it can be seen that the most suitable SVM type is the RBF Kernel and the camera position in the fall detection dataset (FDD) produces the highest accuracy in classifying falling incident and daily living activity which is 95%.

Keyword: *fall detection, image processing, accuracy*