ABSTRACT

Smoke Detector is a device for detecting smoke, which an indication for appearance of fire. Usually, most of the smoke detector installed in buildings is a smoke detector based on sensor. This kind of smoke detector is not doing their performance well when the smoke appears on open and big place.

Because of the fast development of technology, there are so many research based on image digital. This research is to make a smoke detector system based on video us- ing Gaussian Mixture Model method for background subtraction process, this process propose to separate the moving object (foreground) and background, also using Wavelet Analysis method for analyzing spatial energy of smoke and nonsmoke, and using K-Nearest Neighbor method as the classification method.

Smoke detector system based on video analyzed based on several parameters from some testing, such as Gaussian Mixture Model parameters, range value of threshold in Wavelet Analysis method, also K-Nearest Neighbor parameters. This research get a system which can be detecting smoke and also nonsmoke object on video with accuracy 96.59% and computation time 6.01 seconds.

Keywords: *Smoke, Video, Spatial Energy, GMM, Wavelet Analysis, KNN*