

Abstract

Recognition system is one solution that is closest to the object recognition system senses of human beings. In contrast to other detection systems that use conventional methods that can not be represented into the human senses, recognition systems utilize data that can be represented resemble the human eye by utilizing the characteristics of the object that can be seen physically by the human eye. On fire object has unique characteristics and features unique region changes when seen in the sequential images. By utilizing the characteristic features and changes in this area so much to do research on fire detection using sequential image to replace mechanical flame detector.

Use of the characteristic features of the color of fire has been widely discussed in various studies with results good performance in terms of accuracy and time. But in general the use of the characteristic color of fire utilizes all parts of the value of the fire features in order to increase accuracy. The uniqueness of the red color on the contour fire will enable to build a fire detection system using a narrower search space. The use of contour extraction has been widely used by many researchers to detect fires using sequential image [10.17]. According to Wang, the use of ecstasy contours on the object is at the core of fire detection systems on sequential images to improve detection accuracy values [17].

Solving the search space is done in stages by utilizing the characteristics of temporal and spatial characteristics. In the spatial phase of each frame is processed into binary image to obtain corresponding pixel and is considered as the object and then the objects are filtered based on the average value of each object and gray contour extraction in order to see the RGB values that are at the edges of the object. In the temporal stages, analysis is done by comparing the movement area of an object suspected fire on two different frames. By looking at the change in the value of broad and overlapping areas owned by the fire, then each frame is compared to determine the changes experienced by each object so that it can be known whether the object is a fire or not. Based on the research use of contour extraction and analysis on the movement area of the fire detection system produces value accuracy of 90.33% with a background of the object darker fire and the fire was enlarged.

Keywords: fire, sequential images, spatial-temporal, contour extraction, rgb, area movement analysis.