

ABSTRACT

Smoke Detector is defined as a tool for fire prevention in a room by detecting smoke from the sensor. Smoke Detector is commonly used in office room, smoking room, as well as in the rooms in the house. In this final project, a Smoke Detector designed in a Smoking Room prototype for anticipating the occurrence of fire and still maintain the quality of the Smoking Room using the image processing by using a webcam with SOM and Backpropagation Neural Networks which result from both methods will be compared.

Smoke Detector accuracy of identification Smoking Room condition is accurate if Smoke Detector can perform smoke detection in accordance with the concentrations that have been processed according to the procedure applied methods. In this final project, I used ANN-SOM and Back Propagation. The system process the image of smoke obtained from the captured offline, then classified by reference to the MOS (Mean Opinion Score). Furthermore, the capture of smoke offline and online used as system input and output are expected to provide the appropriate classification of smoke with the training image.

In the simulation analysis results Smoke Detector on a prototype Smoking Room using ANN-SOM and Backpropagation obtained accuracy rate above 94% for the ANN-SOM and 93% for Backpropagation. So it can be concluded that the ANN-SOM is better than Backpropagation, both offline and online. And can also be concluded if we use more number of labels, then the computing time required system are also getting longer.

Keyword : Smoke Detector, JST-SOM, Backpropagation, realtime, Smoking Room, Digital Signal Processing, webcam, Mean Opinion Score.