ABSTRACT

Traditional fire detectors that are already been installed in most of the buildings these days are usually the sensor-based ones, infrared-based sensor, smoke-based sensor, etc. But these sensor-based detectors need to be placed in the right position and not suitable for outdoor environtment. With a well-positioned CCTV camera, it can be a lot helpful to detect wildfire earlier if equipped with the right software.

This final project explains the design and implementation of a visual-based early fire detection system. Stages in this system includes moving pixel detection using Three-frame differencing, feature extraction using Grey-level Co-occurrence Matrix (GLCM) and Local Binary Patterns-Three Orthogonal Planes, and classification using k-Nearest Neighbors (kNN).The output of this final project is a system that can detect and show the location of the fire in a video image.

Keywords: fire detection, three-frame differencing, Local Binary Patterns-Three Orthogonal Planes, Grey Level Co-occurrence Matrix.