

## 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 environment. 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 will be developed a fire detection with CCTV using dataset like video. So this final project there are many stages first, this system will detect a moving pixel from video with background subtraction method after that the moving pixel will be filter in the second stage, and system will detect color pixel using HSI color rule. In temporal analysis there are two stage growth rate analysis with fitting curve and flow rate analysis with optical flow method. In growth rate analysis will extract a centroid fire data and will be check on fitting curve to find fiterror value and make decision from that video and the next analysis flow rate analysis will extract a flow rate value from analysis velocity value of optical flow. The output of this final project is a system that can detect and show the flow of the fire in a video image.

Keyword: fire detection, background subtraction, HSI, optical flow, motion, flow rate, growth rate fire, fitting curve.