

## ABSTRACT

System of counting the number of visitors of public places at this time is generally obtained manually. However, the human factor has a vision that is less alert can cause errors in counting the number of visitors. Another way is to use sensors in the room to count automatically, but require a more expensive cost. The solution to these problems is to use a webcam tool to obtain an automatic system of counting the number of visitors with a cheaper cost.

This final project examines an application of motion-detection system that uses webcam to monitor the room and count the number of objects that enter or exit the room. This final project is focused to distinguish a moving object is a human and not human. The method used in calculating the number of visitors automatically is frame averaging method using a webcam mounted on the bar room door facing down. This method of extracting an average of some number of early time frame and then subtracted with the next frame. Then the frame difference value obtained will be selected with the process of thresholding, and then track the direction of movement of centroids. To distinguish the objects that enter and exit the room is human or not human, then analyzed characteristics of the physical object that includes adan wide aspect ratio. Input to the simulation in a video recorded in the format \* wmv then converted into the \* avi format. While the output from simulations of the number of visitors who enter and exit as well as the number of visitors who identified human and not human so it is known the total number of visitors who are in the room.

The system reliability was tested by simulating the field conditions. The test results show that the system is able to identify the moving object is a human with 98.3% accuracy, using a threshold of 60 and 120 objects of observation lines at load time in the morning. Meanwhile, to identify the object is not a man to achieve 100% accuracy at any time of the taking and every line observations with the threshold used is 60.

**Keywords :** digital video, frame averaging, centroid, motion detection, object physical characteristics.