

Abstract

People counting has been widely applied in some places to determine the business decision-making, monitoring public places, and others. Most people counting carried in places such as bus stops, train stations, and airports to improve services, monitoring, and advertisement management.

In this study, the calculation will be done using video. Background subtraction is done first in order to have an object. Methods that will be used for background subtraction is Gaussian Mixture Model (GMM). Results of the GMM is a binary image that is black and white, where black shows background and white shows foreground. Then, detection skin color on the foreground by using Normalized Color Coordinates (NCC). Skin is used to remove noise by calculating the ratio of the number of skin color pixels and the total pixels of the skin area. Furthermore, because the aspect ratio of the human face has size estimates [9], then use the ratio of the height and width of the face has been detected. If the ratio of the skin that have been detected have a ratio corresponding to the predetermined ratio, the skin is used as face candidate. To determine that the candidate's face is the face. Then used standard deviation upper comparison with the bottom of face candidate, where the image used to calculate the standard deviation of the original image is converted to grayscale. Finally, the tracking is done on a face image using the euclidean distance to the face through the LOI and then do the calculation. The results of the experiments conducted, the results showed more than 70% for an average accuracy of each case.

Keywords: people counting, normalized color coordinates, skin ratio, face detection, foreground, LOI.