ABSTRACT

This final project designed and implemented color code matrix reader based on webcam and image processing to make parking system prototype in IT Telkom. This system is hoped to repair manual system not only for security but also monitoring. This system used color code matrix as the identity of user. Each user registered them self in system parking databases and they had unique color code matrix that contained motor cycle and user identity information.

To know the color code matrix pattern, this system used detection method according to evaluation on ycbcr component from color code matrix in order to make system able to classify color although there is difference in color intensity. In order to make color code matrix position suitable with color and background sensor, so a fix *capture* place was needed. Then set webcam in front of *capture* place to take user tag image. Each color sensor is sampled by ycbcr component from color code matrix to classified as red, green, blue, or black

To test this system, there are indoor experiments with 4 scenarios consist no lighting, with lighting above webcam, in 45^0 from webcam and 90^0 from webcam. Result of this experiment is accuracy 89 % and computation time is 5, 5 second. And outdoor experiment in the morning, afternoon, evening and night, its result is accuracy 89 % and computation time 9, 49 second. So optimal condition is in the morning for outdoor experiment and with lighting on above of webcam for indoor experiment with their accuracy are 100 %.

Keywords: color code matrix, parking system, database, lighting