

## ABSTRACT

The door is an access of people to leave or enter the house. In general, people use a conventional key vulnerable missing, damaged, or misused by others, it would be deemed less practical and flexible.

Therefore researcher invented a system that can replace the function of the key, with the development of technology allowing interaction between humans and computers through visual media, with a unique combination of numbers formed from the pattern of the fingers into the lock system that is flexible and practical. In the image processing itself is used by the Raspberry Pi since its small dimensions and performance specifications are quite high, coupled with the control in it. The method used to recognize patterns of fingers is the convex hull and convexity defect, then it will generate a number of images of the fingertips pattern.

Results of this design is that the system can work to identify patterns of fingers, the five patterns are different. Tests carried out on several different conditions,, the testing algorithm simplifying the line of Douglas-Peucker, the value of epsilon best in the 0:01 x length of the curve, the processing time per frame of the fastest on the frame of 320x240, and the accuracy of the pattern recognition reaches 100% with a distance of less than 100 cm hand toward the camera, light rooms were adequate, and the hand position perpendicular to the camera.

**Keywords :** convex hull, convexity defect, doors, control, image processing, Raspberry Pi.