ABSTRACT

Smart Home is one of the most famous technologies today and is often heard by us. The use of this smart home system is very helpful for users in reducing the waste of electrical energy and provide ease in controlling. But today's smart home system needs to be developed to be better, for example with the addition of facial recognition features or face recognition. This facial recognition will then perform the user's facial recognition. Then this feature will be integrated with the smart home system to control automatically so as to make the use of electrical energy more efficient and also provide convenience to the user in the operation of electronic devices, because the system will adjust the use of electronic devices in accordance with the user's habits and room conditions.

In this final task, this smart home system uses face recognition with The Faster R-CNN algorithm. The use of this algortima is due to ideal computing, complexity and good classification capabilities. The data that has been obtained will be conducted training and classification which will then be read by the system as a habit of the user. So that the system automatically adjusts the use of electronic devices and electrical energy in accordance with the user's habit data and room conditions.

Based on the testing process carried out from the stage of model making, training, to the facial recognition process, the resulting model has an output that can identify and classify the user's face based on confidence values in the bounding box. After going through the stage of model creation, training and object recognition, which uses dataset distribution parameters and Learning Rate parameters in its testing. For testing with dataset distribution parameters obtained system performance values of 99%, 92% for precision and 89% for recall values. As for testing with learning rate parameters have results for system performance of 90%, 80% precision value and 79% recall value. Thus this system can achieve maximum performance.

Keywords: Computer Vision, Face Recognition, Faster R-CNN, Object Detection, Smart Home.