

ABSTRACT

Indonesia is a country that has a tropical climate, where there are 2 seasons that occur alternately in Indonesia, namely the dry season and the rainy season. With the occurrence of the dry season in Indonesia, which causes high temperatures that can be felt by people in many areas, especially in urban areas that are dense with buildings and people. Because the air temperature is high, people can feel uncomfortable with their bodies, because high temperatures can cause the body to sweat. People tend to choose another alternative, namely the use of Air Conditioning. However, with constant and unregulated continuous use, the power consumption of the Central AC will increase, so that the air conditioner can cause wasteful energy use, and even increase electricity bills. In previous research, by setting a certain set point temperature on the Air Handling Unit (AHU) in the Central AC, it can lead to energy savings. In this final project, we will discuss how to answer these problems, by designing a detection system and counting the number of people, which later the variable number of people will be used as a parameter in controlling the temperature of the Central AC.

This system is designed using the Python programming language, along with machine learning libraries, such as Tensorflow, and OpenCV. The dataset used is a custom dataset that contains 10 categories of images based on the number of people in one image, and various human poses. Each category contains 50 images, so the total images used are 500 positive class images, plus 100 negative class images that do not contain people. In one of the best models used, the akurasi value is 95%, the presisi value is 95%, the recall value is 99%, the steps are 100000, the epochs are 50 and the Learning Rate is 0.002 which is obtained through the Confusion matrix calculations performed on the dataset. At the time of direct human detection testing, the tested models provide varying accuracy, and the system can achieve highest accuracy 100% maximum. The system can detect Objects in the form of humans well.

Keyword: OpenCV, Tensorflow, RPN, CNN, Faster R-CNN