ABSTRACT

At this time, products with the internet of things based to be snowballing. One of them is a prototype adaptive light that the author built. The prototype can switch on and off based on eye movement detection. The prototype used a *webcam* for *input*, which will be processed using machine understanding or detecting objects.

The author's reason for building the prototype is based on a true story, he often falls asleep but forgets to turn off the lights. It's a bad habit that does not align with the promoted energy-saving movement. Then the reason for using machine learning in making this prototype is because various fields are developing it, and YOLOV5 is one of them, where the algorithm is used for object detection.

This prototype works because the *webcam* will capture an image of our eyes. Then machine learning will detect whether our eyes are open or closed. If the eyes are available, the light will still be on, but when the eyes are closed, the light will be turned off when the eyes are detected closed. From the detection, *raspberry pi* will respond to the detection results by switching the relay. After that, the *relay* will turn on or turn off the light.

From the prototype that has been made, the results are obtained that the tool can work properly, where when the eyes are detected closed or included in a sleepy condition, the light will automatically turn off. Then when the eyes are seen open or included in normal conditions, the light will automatically turn on. The prototype can work adequately in the range 1.5m – 2.25 from *web cam*, with illumination intensity around 17lx, and maximum angle object detection is 30° from webcam.

Key Word: *IoT, Machine learning, CNN, YoloV5, Raspberry pi, Relay.*