ABSTRACT

Lithium-Ion batteries are widely used in many technologies, from very simple technology such as flashlights to very advanced technologies such as electric-powered vehicles such as the SLS AMG Coupe Electric Drive which is a sports car made by Mercedes-Benz which has 4 electric motors of which the fourth These motors are each powered by 1 battery. Defects in this battery can be fatal, from reduced energy stored in the battery, or even the battery may explode. Therefore, we need a tool that can detect defects in this battery so that it can be distinguished which batteries are good or not. To detect these defects, a visual inspection of the physical condition is usually carried out which can be done with pictures or by using the naked eye.

The system performs a visual inspection using object detection and deep learning. The system also uses the Faster R-CNN algorithm as an object detection system. Then the image of the object detection will be processed and sent to a small computer for further processing using deep learning. The system will issue an output, if the product does not have a defect, then the system will issue an output in the form of a label of what defects are contained in the battery.

The result of this research is that the Faster Region Convolutional Neural Network (Faster R-CNN) algorithm obtains training model results with a mean average precision (mAP) of 76.21%. These results were obtained by conducting several tests with several parameters to compare the results to find the best parameters to use in this model

Keywords: *Detection object, Visual inspection, Faster R-CNN, Battery cell, lithium-ion battery pouch*