

Pemanfaatan *Deep Learning* untuk Mendeteksi Sel Darah Merah dan Sel Darah Putih Menggunakan Model *Yolov5*

Arriva Miftahul Birri

*Program Studi Teknik Komputer, Fakultas Sains & Teknologi
Universitas Teknologi Yogyakarta
Jl. Ringroad Utara Jombor Sleman Yogyakarta
E-mail : arrivariva05@gmail.com*

ABSTRACT

Deep learning is part of machine learning to classify and detect images directly. Object detection is part of computer vision which refers to the ability of computers to detect several objects. The application of object detection itself is very useful to help lighten work, save time, and also make the right decisions, fast and more appropriate, of course. One application of object detection is to detect red blood cells and white blood cells. The method used to detect objects on red blood cells and white blood cells uses the Yolov5 algorithm, while the model used is the Yolov5s model. To make the model must go through a training process, where to do the training you must have a dataset, the dataset used is a collection of images of red blood cells and white blood cells with a total of 2280 images. The dataset is trained using Roboflow, where the Roboflow dataset will be converted to yolov5, the results of the conversion on Roboflow will be retrained using the Tesla K80 GPU on Google Colaboratory to create a model from yolov5s. The results of the training dataset obtained an mAP value of 93.1%, a recall of 94.0%, and a precision of 85.0%. The test itself is carried out using two methods, namely directly (real-time) and indirectly (non-real-time). Direct testing is carried out using a camera module that is connected to a laptop that has been implanted with a system to detect red blood cells and white blood cells. The results of these tests got an average accuracy value of 91.95%. Then for indirect testing, the test is divided into two ways, first is indirect testing with a collection of images of red blood cells and white blood cells, the test results get an average accuracy value of 94.3%, and the second test indirectly using video recordings containing red blood cells and white blood cells, the test results obtained an average accuracy value of 73.92%.

Kata kunci : *Deep Learning , YoloV5, Object Detetction, Red Blood Cells, White Blood Cells*