ABSTRACT

Leukemia is a type of cancer that begins in human blood cells. Its aggressiveness can lead to rapid growth, and without proper treatment, it can be fatal within a few months. To aid in diagnosis, there is a system that utilizes image analysis to quickly diagnose diseases. In this study, a system was designed for the classification of Acute Lymphoblastic Leukemia (ALL) into 4 classes: Benign, Early, (Pre) Precursor, and Pro (Progenitor) using Convolutional Neural Network (CNN) methods with 2 architectures: MobileNetV3-Large and EfficientNet-B0. The data used consisted of 3,256 images divided into 4 classes: Benign, Early, precursor, and Progenitor. The classification results of Acute Lymphoblastic Leukemia using the EfficientNet-B0 architecture performed better than the MobileNetV3-Large architecture. The validation accuracy of the EfficientNet-B0 architecture reached 97.84%, while when tested with test data, it reached 98.48%. Meanwhile, for the MobileNet-V3-Large architecture, the validation accuracy reached 96.60%, and when tested with test data, it reached 96.32%. It is hoped that this system can assist medical professionals in detecting ALL more efficiently and accurately.

Keywords: Acute Lymphoblastic Leukemia, Convolutional Neural Network, Efficientnetb0, Hyperparameter, Mobilenetv3large