

## ABSTRACT

Sign language is the primary communication tool for individuals with hearing impairments and plays a crucial role in supporting social interaction. However, the limited public understanding of sign language often hinders effective communication. Various studies on sign language recognition, particularly American Sign Language (ASL), have been conducted. However, the models used in previous research typically have a large number of parameters, making them less efficient for implementation. In this study, ASL classification was performed using the EfficientNetV2B0 architecture, chosen because it has fewer parameters compared to other models, thus offering greater efficiency. The dataset used includes images representing numbers, letters, words, and expressions in ASL. The model training process involved exploring various hyperparameters, such as learning rate, dropout rate, batch size, and the use of dense layers. Training was carried out on both augmented and non-augmented data to determine the best configuration. Additionally, regularization techniques such as early stopping were employed to prevent overfitting. Experimental results showed that the model achieved 99.57% accuracy on augmented data with a learning rate of 0.00001, a dropout rate of 0.2, a batch size of 16, and the inclusion of a dense layer. Meanwhile, on non-augmented data, the model achieved 99.52% accuracy with a learning rate of 0.00001, a dropout rate of 0.2, a batch size of 16, and without the addition of a dense layer. This approach demonstrates the capability of EfficientNetV2B0 and the application of data augmentation in accurately recognizing various ASL sign patterns. It is hoped that this research will contribute to the development of a reliable and effective sign language recognition system, which can then be implemented in various communication and accessibility services for the deaf community.

**Keywords** : American Sign Language, Data Augmentation, Sign Language, EfficientNetV2B0, Hyperparameter, Image Classification