



**PROJECT REPORT**  
**DEVELOPING A SIGN LANGUAGE TRANSLATOR**  
**APPLICATION BASED ON IMAGE PROCESSING**

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## ABSTRACT

*Sign language plays an important role in communication for the deaf community. However, there are still difficulties in interacting with individuals who do not understand sign language. This study aims to develop a real-time sign language recognition and translation system using the YOLOv5 model and compare its performance with and without preprocessing techniques. The dataset used is the Indonesian Sign Language (BISINDO) from Agung Maruf which is available on Kaggle. In the first approach, the data is used without preprocessing, while in the second approach, preprocessing is carried out in the form of normalization, augmentation, and segmentation to improve data quality. The YOLOv5 model is then trained and validated using transfer learning techniques and hyperparameter tuning to optimize performance. The evaluation results show that the use of preprocessing improves the accuracy of sign language gesture detection and translation, but has an impact on increasing computation time. Conversely, without preprocessing, the system works faster but experiences decreased accuracy, especially in less-than-ideal lighting conditions. This system is expected to help improve communication for the deaf community in everyday life.*

*Keywords: sign language recognition, YOLOv5, BISINDO, preprocessing, real-time translation*

