## *ABSTRACT*

*Communication is a social activity carried out by two or more people to exchange information. Communication can be done anywhere and at any time. However, normal communication cannot be carried out by people with special needs, especially the speech impaired. This problem causes many disadvantages for deaf people in communicating with hearing people. One solution that can minimize this problem is to create a system that applies Deep Learning technology precisely by using the Convolutional Neural Network algorithm and the YOLOv4 architecture in the recognition and detection of the Indonesian Sign Language alphabet (BISINDO). Computing speed and lightness are also important considerations in this research to obtain good results with the fastest possible computing time. Based on the results of the research carried out, the model built is able to recognize all BISINDO alphabets correctly and accurately. The model was tested 130 times in the testing process using a web camera running on Google Collab. The model is able to produce an average mean precision value of 98.08%, with a threshold value of 0.50. In the model performance results based on the confusion matrix parameters, the model was able to produce an accuracy value of 99.98%, a recall value of 99.7%, and a precision value of 99.7%.*



***Keywords:*** *Artificial Intelligence, Convolution Neural Network, Deep Learning, Object Detection, OpenCV, Yolov4*