

ABSTRACT

Deaf people primarily communicate through sign language. In different parts of the world, there are different types of sign languages, such as American Sign Language (ASL) in the United States and Sistem Isyarat Bahasa Indonesia (SIBI) in Indonesia. Sign language helps deaf people communicate, but the public is still very limited in understanding and using this language. This creates barriers for deaf people and people who do not understand sign language to communicate. The development of information technology in the modern era provides a great opportunity to create solutions to overcome communication challenges.

The approved solution is to implement machine learning algorithms LSTM and YOLOv8 to recognize gestures and images of sign language. This project develops a website-based application as a platform for a sign language translation system, this website also aims to be an effective learning medium. This website is expected to increase public interest in learning and understanding SIBI sign language.

In testing using several parameters, the LSTM algorithm can detect and translate sign language with 98% accuracy. Meanwhile, the YOLOv8 algorithm performed quite well in identifying and translating images in the sign language alphabet, with 99% accuracy and mAP 50-95 98%. Gesture detection accuracy was very sensitive to lighting but was able to capture one user at a time. YOLOv8 is ideal in bright light conditions, but degrades in low light conditions and at more than 3 cm. The index results from the usability testing showed that the sign language interpreter system was rated favorably by users with a score of 80%, but the translation duration, tutorials provided, and the website needed improvement with scores of 76%, 68%, and 78% respectively. In general, SLB Negeri Cicendo Bandung users consider this interpreter system good, but some parts still need an optimization push to expand user fulfilment.

Keywords: SIBI, LSTM, YOLOv8, Sign language translator.