***Implementation of Long Short-Term Memory (LSTM) for Real-Time Recognition of Simple Indonesian Sign Language (BISINDO) (Case Study at* Kedai Susu Tuli)**

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ABSTRACT

Indonesian Sign Language (BISINDO) is a visual language used by individuals who are deaf and hard of hearing to communicate in daily life. This study aims to develop a web-based application capable of recognizing BISINDO gestures and translating them into speech in real-time. The case study was conducted at Kedai Susu Tuli (K-Suli), where static learning media such as books and posters are less effective for capturing the dynamic movements of sign language. The developed system utilizes MediaPipe Holistic to extract body pose, facial, and hand landmarks from real-time camera input. The extracted data is then processed using a Long Short-Term Memory (LSTM) model with a BiLSTM architecture to classify the gestures. Subsequently, a text-to-speech feature based on gTTS converts the recognized gestures into speech instantly. The dataset used consists of 1,500 videos covering 10 vocabulary words. Testing results show that the application can recognize gestures with an average real-time accuracy of 80% by non-deaf users. Furthermore, User Acceptance Testing (UAT) recorded a user satisfaction rate of 91.4%. Therefore, this system offers an innovative solution to improve accessibility in BISINDO recognition.

Keywords: *Sign Language, BISINDO, Long Short-Term Memory (LSTM), MediaPipe Holistic, Realtime, Web Application, Text-to-Speech*