

REAL TIME SIGN LANGUAGE TO TEXT CONVERSION WITH EMERGENCY ASSISTANCE

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People with speech and hearing impairments depend on sign language to communicate when talking out loud isn't possible. The use of ISL with its frequent, active hand movements creates challenges for recognition due to its complexity, changes in different regions and lack of proper datasets. It discusses the steps taken in real-time ISL-to-text conversion systems such as using deep learning for gesture recognition, contextual information from NLP and responding to emergencies. With the use of techniques such as MediaPipe and BiLSTM, recent studies have reached gesture recognition rates higher than 98%. Transformer-based systems such as T5 also result in better fluency when generating sentences, so that BLEU scores go above 0.81. When YOLOv5 and CNNs are paired in emergency detection mechanisms, they achieve a detection accuracy of up to 99.6% and APIs like Fast2SMS ensure that alerts are sent through SMS in only seconds. While there are systems that work well in recognition or emergency situations, a combined and real-time system that involves all features is rare. This review identifies open areas in ISL research and recommends changes and strategies to ensure the future development of inclusive, reliable ISL recognition technology.