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Dynamic Sinhala Sign Language Recognition System by Image Processing with Deep Neural Networks

Final project report

by

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Abstract

Deaf people use sign language as their primary communication method. The most common sign language in the Sri Lankan context is Sinhala Sign Language. However, most people who do not have hearing issues reject learning sign languages due to the complexity of Sinhala Sign Language by having various signs in different areas within the country. This makes it the complexity to learn the Sinhala Sign Lange correctly. Moreover, even if you learn the Sinhala Sign Language, your practised signs may not be understood by the signers from other areas of society.

Signs performed by the signers can be identified using various techniques like sensors and cameras. The sign recognition systems based on the sensors were popular due to the lack of accuracy of machine learning techniques. Nevertheless, image-based recognition systems have become popular with the rise of neural and deep neural networks because deep learning models can provide more complex classes than machine learning models.

The project Dynamic Sinhala Sign Language Recognition System by Image Processing with Deep Neural Networks is a novel approach to making an SSL translation system using image processing and deep learning. These works are started by creating their own video dataset and designing and implementing a prototype to prove the concept to uplift the domain area for more scientific research.

Keywords: Sinhala Sign Recognition; Vision-Based Sinhala Sign Language Recognition; Deep learning; Image processing; Gesture Recognition