ABSTRACT

Communication is an important activity in human life that cannot be separated. However, not everyone can communicate well, particularly persons with disabilities. Sign language is used as a communication language with people who have disabilities. To be able to help people with disabilities, the program Sign Language movement detection using Computer Vision is needed. The system uses the OpenCV library for real-time image or video processing and the Python programming language. Computer Vision uses Hand Tracking with the MediaPipe library for hand tracking and detection. The design of the system is performed using the CNN algorithm for recognition and detection of visual objects or patterns in images (datasets). TensorFlow library for building and training CNN models based on manually selected datasets captured from webcams. Webcams work to record real-time images or videos of the hand, which are then used in the detection process. After testing the whole system, the results show that the best CNN model to use is a layer 4 CNN model with an overall accuracy per webcam card of 99,5%, followed by model training with a hyper-parameter batch size of 32 and an epoch of 10 on model evaluation results achieving training accuracy of 98,28% and validation of 93,45%. And the test results also show that the system can detect the movement of sign language using computer vision with hand tracking method.

Keywords: Sign Language, Computer Vision, CNN, Hand Tracking.