ABSTRACT

Stroke is one of the leading causes of death and long-term disability worldwide, including in Indonesia, due to disrupted blood flow to the brain. In addition to being dangerous during the initial attack, stroke often leaves residual symptoms such as facial asymmetry in the post-stroke phase. However, monitoring these symptoms remains limited, especially in areas with low access to medical services. The FAST method identifies facial changes (Face) as a key indicator in early stroke detection. Therefore, the use of technologies such as computer vision and deep learning offers a promising alternative by utilizing the (F) indicator to build an automatic, efficient, and real-time facial-based stroke symptom monitoring system.

This study develops a stroke detection model based on deep learning using the MobileNetV2 architecture, and compares its performance with CNN-ResNet50. The development process follows the CRISP-DM methodology, starting from business understanding to model deployment. The dataset consists of facial images of stroke patients and normal individuals, processed using alignment (MediaPipe), cropping (MTCNN), and image augmentation techniques. The model is trained to classify images into two categories: stroke and normal.

Evaluation results show that MobileNetV2 achieves an average accuracy of 95.29% ± 1.13%, with consistent precision and recall, and an AUC score of 99.08% ± 0.0037. Additionally, the model is lightweight (~14 MB) and computationally efficient due to the use of depthwise separable convolution, making it suitable for deployment on mobile or edge devices.

Keywords **— Stroke *Monitoring, Deep Learning, MobileNetV2, Facial Recognition, Telemedicine***