ABSTRACT

IDENTIFICATION OF FACIAL PARALYSIS
USING DETECTION TRANSFORMER

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Facial paralysis detection is a critical aspect of diagnosing and treating neurological conditions that affect facial muscles. However, the physical examination process can lead to misdiagnosis, especially due to the similarity of facial paralysis symptoms with other neurological conditions. Medical imaging examinations such as CT scans or MRIs are not recommended. This study aims to develop a facial paralysis identification model using Detection Transformer (DETR), a state-of-the-art deep learning architecture proven to excel in image detection tasks. In this research, the dataset of images used is from the YouTube Facial Palsy (YFP). The study implements the DETR algorithm with a ResNet backbone to detect facial paralysis, consisting of four object classes: Normal, Medium, and Strong. The dataset was annotated using Roboflow to generate bounding boxes for each image and included preprocessing stages, such as resizing the images to 224 x 224 pixels and splitting the data into three subsets: 70% for training, 20% for validation, and 10% for testing. Experimental results show that DETR with ResNet50 gets the greatest evaluation result with a mAP value of 0.687. The model successfully detects and classifies objects in the images with a reasonable level of accuracy. Although not perfect, this performance demonstrates that the model is reliable for detecting facial paralysis.

Keywords: *Deep learning, Detection Transformer, face detection, facial paralysis,*