

ABSTRACT

A pituitary tumor is an abnormal growth of cells around the brain that is abnormal and dangerous, which can affect self-efficacy, reduce quality of life, and potentially cause death. Therefore, technology is needed to detect the presence of pituitary tumors, one of which is through MRI image analysis. This study utilizes feature extraction using Gabor and CNN filters to identify pituitary tumors. Before the identification process, the preprocessing stage is carried out in the form of conversion to grayscale, resizing, and normalization. Features are extracted using Gabor filters on the first convolutional layer with sigma parameter (σ) = 2; orientation (θ) = 0° , 45° , 60° ; lambda (λ) = 6, 8, 10; and psi (ψ) = $0.\pi/2$. The process continues with two layers of convolution before the identification stage, which uses 18 neurons with the function of adamax activation. The results showed that the algorithm developed was able to identify pituitary tumors with 91.22% accuracy at the 50th epoch and learning rate 0.001, based on testing on 74 images.

Keywords : brain tumor, MRI, CNN, Gabor filter, accuracy