

ABSTRACT

Breast cancer is the second deadly disease in Indonesia after lung cancer. The large number of new cases and mortality rates in breast cancer patients is due to a lack of public awareness of this disease, so that patients who come to hospitals are in a severe condition. Histopathological examination is one of the methods of detecting breast cancer which performed manually by a pathologist. However, the diagnostic process of histopathological examination takes a long time and allows "diagnostic drift" or a shift in diagnosis between pathologists. Therefore, the technology is needed to help pathologists to get a diagnosis quickly and accurately. One of the technologies that can be used is computer vision by applying deep learning methods.

The deep learning method has been widely used as one of the developments in detecting various diseases. In this research, the deep learning-based system model was developed using the Convolutional Neural Network (CNN) with Efficientnet architecture, which aims to help the radiologists to get better accuracy and performance in detecting breast cancer.

The system performance was tested on 1361 histopathology images consisting of two classes, i.e. normal and cancer. 75 of the total image data are used for the training process, 10% are used for validation process, and the remaining 15% are used for testing process. By using the proposed method, the system is able to classify images into the appropriate class with the best accuracy rate of 94.26%, precision of 94%, loss of 39,52%, and recall of 95%. This result was achieved on a system model with number parameters, i.e image size 64x64 pixels, Adam optimizer, learning rate of 0.001, batch size of 32, and epoch of 50.

Keywords: Breast Cancer, Convolutional Neural Network, Efficientnet, Histopathology.