ABSTRACT

COVID-19 is a disease that changes our lives. COVID-19 can be spread through droplets, produced by common actions such as talking or coughing. Its airborne, fairly easy way of transmission requires people to wear a facial mask when being outdoors. However, wearing facial masks can hamper the performance of facial recognition systems. Facial mask, when worn correctly, hides a large part of the face, including the nose tip, leaving only the periocular area, the areas around the eyes, visible. Nose tip detection is important in facial recognition, as it helps with facial feature detection, pose correction, and face normalization.

This research aims to propose a method to recognize faces with Convolutional Neural Networks, namely VGG16 and EfficientNetB0. This research analyzes the effectiveness of the two neural networks that is trained on unmasked faces in predicting the identities of a masked subject. The effectiveness will be measured by using accuracy, precision, recall, and confusion matrix. Another method to use custom images, taken from webcam stream, is also introduced.

There are several phases in this research, the first being dataset acquisition from github, data preprocessing, model implementation with convolutional neural networks, both VGG16 and EfficientNetB0, testing with masked faces, model evaluation, and testing with video stream from webcam.

Results of this research is that EfficientNetB0 performs better than VGG16, both in train and validation accuracy, and testing with masked faces.

Keywords: *Facial Recognition, Deep learning, CNN, Masked Face Recognition*