Evaluating deep learning model accuracy in detecting COVID-19 from chest X-ray images

Chayakorn Imsap, Thanaporn Niempinijsakul, Phimsuwaree Semprawat, Thunyani Jitsongserm, Sukanya Maklad, Thanathip Youkhong

ABSTRACT

This research purpose is to find highest model accuracies and performances using transfer learning technique for classifying covid-19 and normal chest X-ray images. **Materials**: A computer with CPU Intel core i9-10900 Ram 32GB and NVIDIA GeForce GPU, Window10, 12 selected pre-trained models in TensorFlow 2.1.0 including VGG16, VGG19, DenseNet121, DenseNet169, DenseNet201, RestNet50V2, RestNet101V2, RestNet152V2, InceptionRestnetV2, InceptionV3, XceptionV1 and MobileNetV2, Anaconda navigator program (anaconda3), Anydesk, Microsoft Excel and Chest X-Ray images from Kaggle website **Methods**: 1) Downloading and installing Anaconda program 2) Coding the model to predict the Covid-19 image using Python 3.6 3) Preparing the chest X-Ray images from Kaggle database 4) The images are divided into 3 sets; train, test and validation set 5) Comparing the performance of the model using the hyperparameters epoch, batch size and learning rate of 16, 16 and 0.0001, respectively 6) Recording the prediction results of each model **Results** The highest accuracy model for detecting COVID-19 are DenseNet169, with the accuracy of 95.4% **Conclusion**: The DenseNet169 provides highest performance in differentiating COVID-19 and normal chest X-ray images with current data set, which can be optimized further for improving the model accuracy.

KEYWORDS: COVID-19, Deep learning, Chest X-Ray images, Anaconda, Kaggle