Powered Rapid and Accurate COVID-19 patients detection by CNN-based models from chest X-ray images

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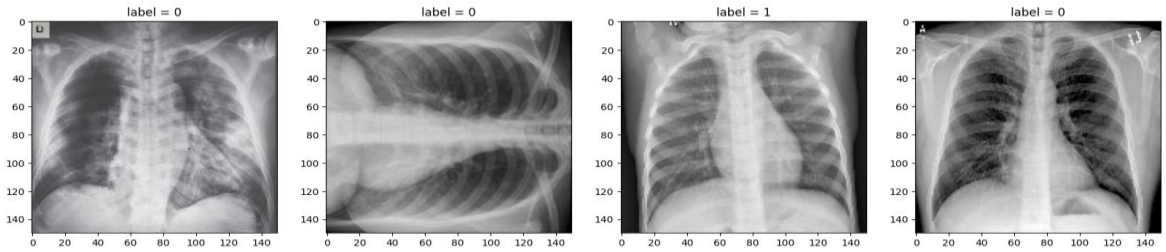
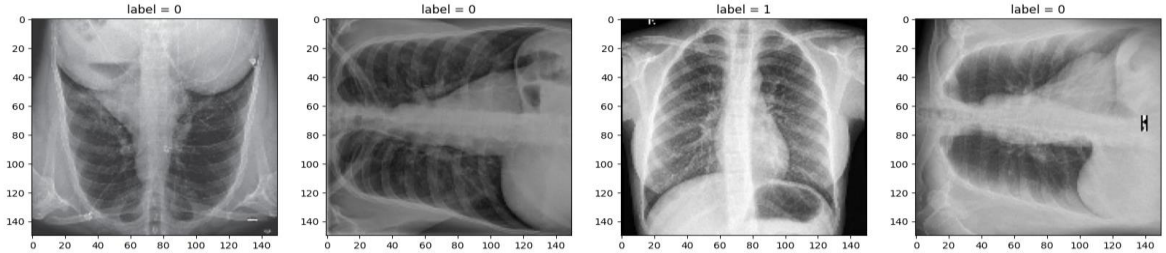
Dataset	COVID-19 images	Normal images	Total images
Total data	450	450	900
Training data	400	400	800
Testing data	50	50	100
Independent validation data	100	100	200

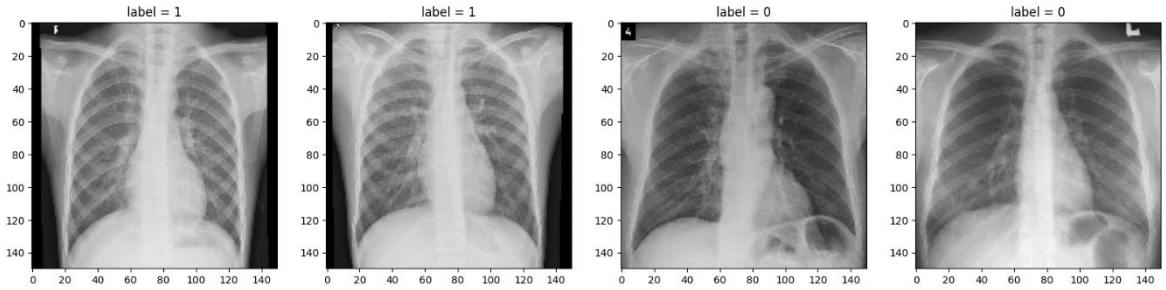
Table 1: Dataset image count for training and testing



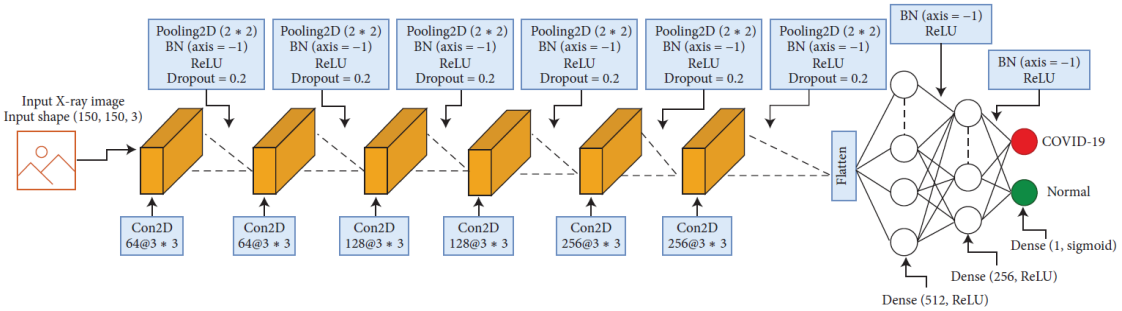
Pic1- Images related to 4 data from batch related to increased training data



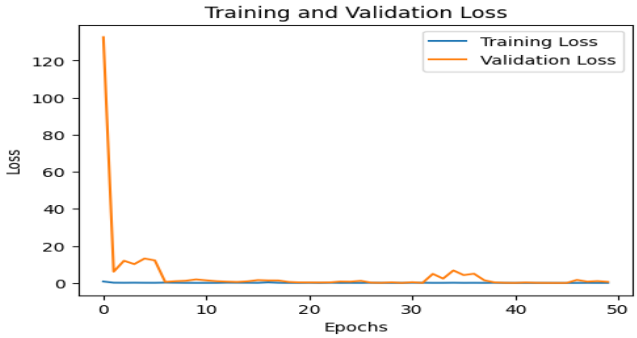
Pic2-Images related to 4 data from another batch related to increased training data



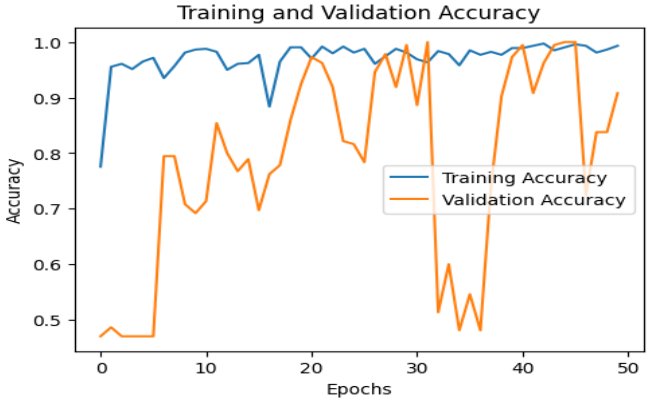
Pic3-Print 4 images of test data for a batch



Pic4-Network architecture



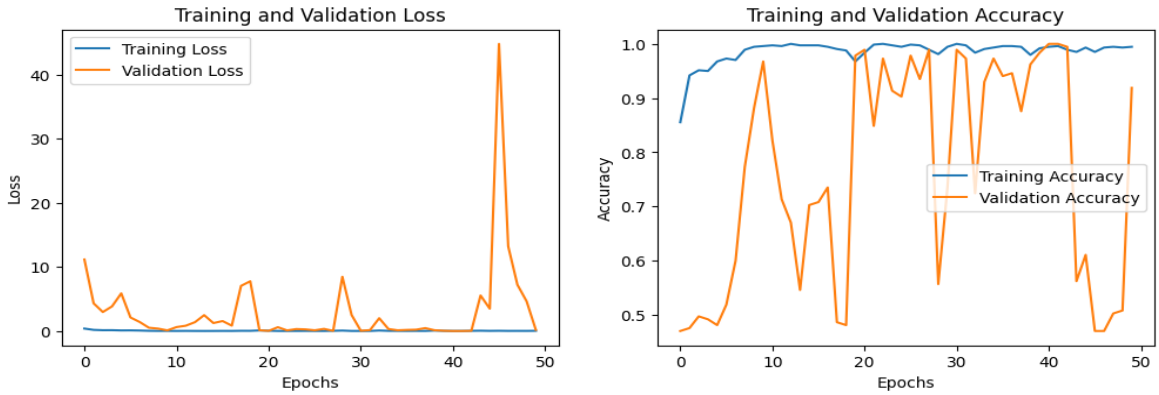
Pic 5-Loss diagram of training and validation data



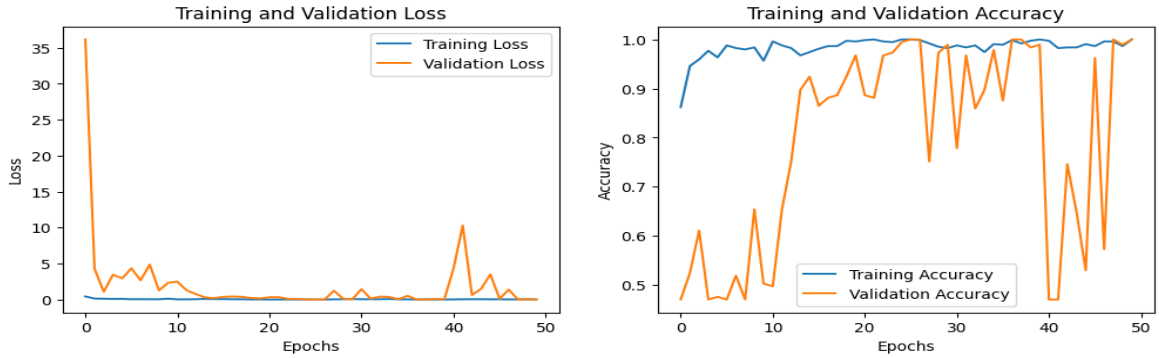
Pic 6-Accuracy chart for training and validation data

Convolutional layer	Test data	Independent validation data
One Conv2D	0.715	0.455
Two Conv2D	0.940	0.895
Three Conv2D	0.995	0.957
Four Conv2D	0.995	0.980
Five Conv2D	0.995	0.995
Six Conv2D	1.000	0.995

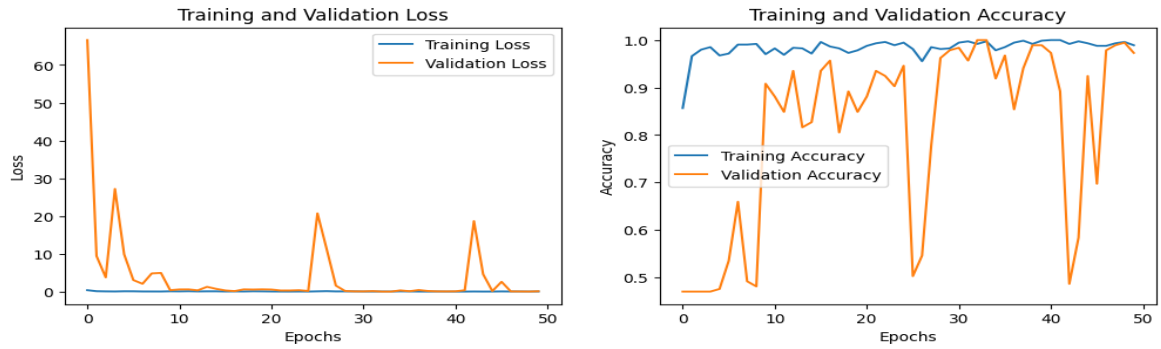
Table2- Evaluation results of the paper for models with different number of convolution layers



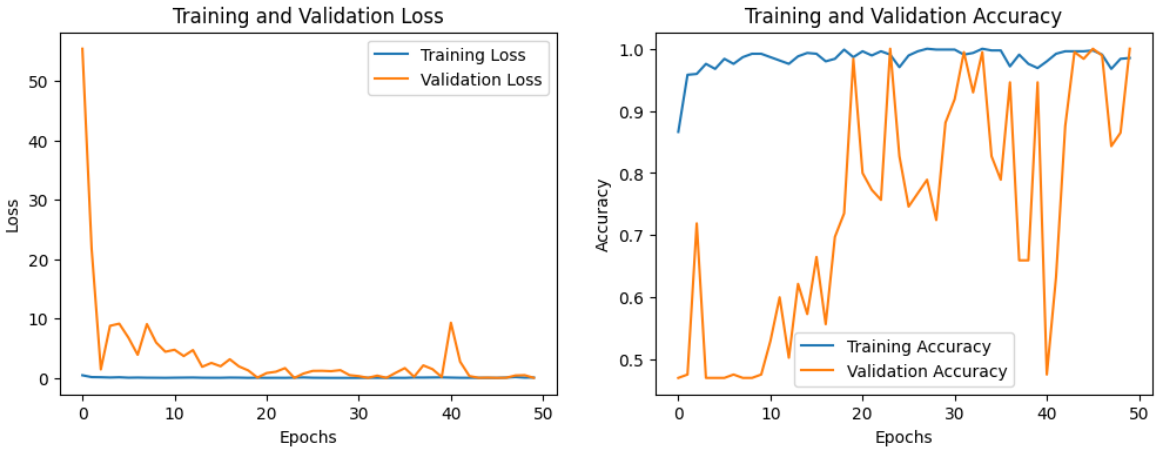
Pic7-Loss and accuracy diagram for training and validation data of the network with a convolution layer



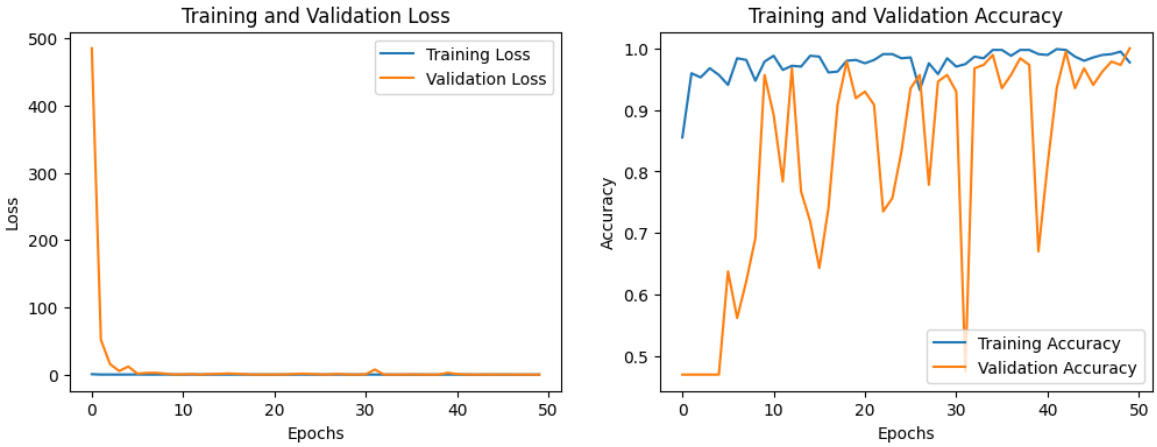
Pic8- Loss and accuracy diagram for the training and validation data of the network with two convolution layers



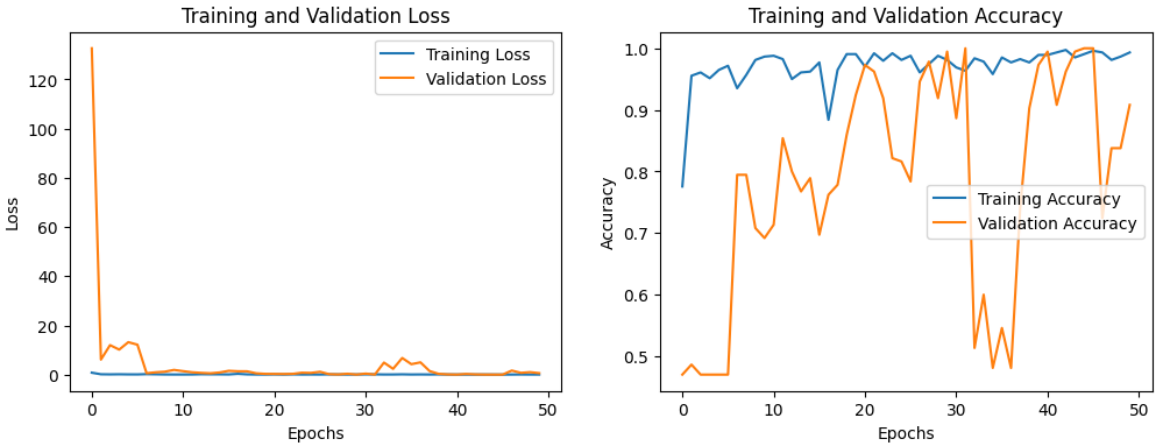
Pic9- Loss and accuracy diagram for the training and validation data of the network with three convolution layers



Pic10-Loss and accuracy diagram for the training and validation data of the network with four convolution layers



Pic11-Loss and accuracy diagram for the training and validation data of the network with five convolution layers

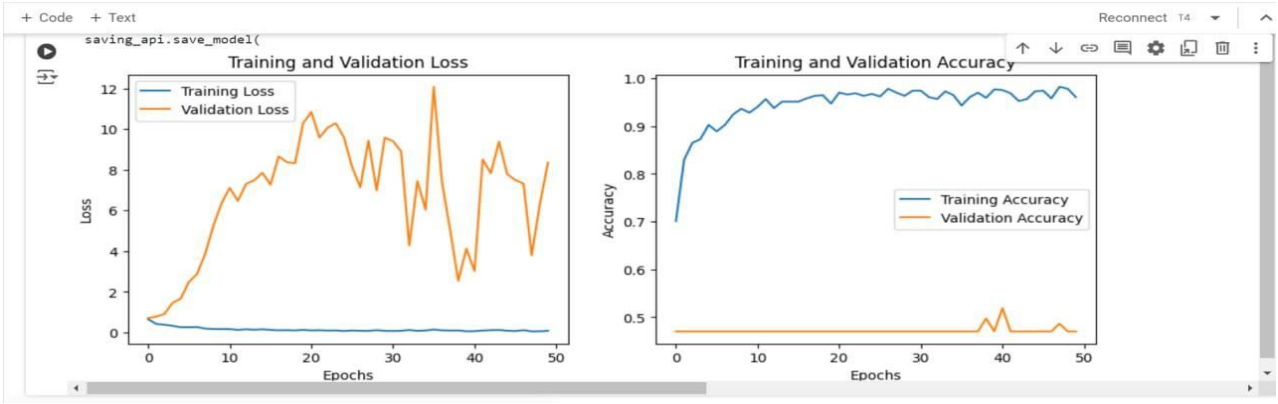


Pic12-Loss and accuracy diagram for the training and validation data of the network with six convolution layers

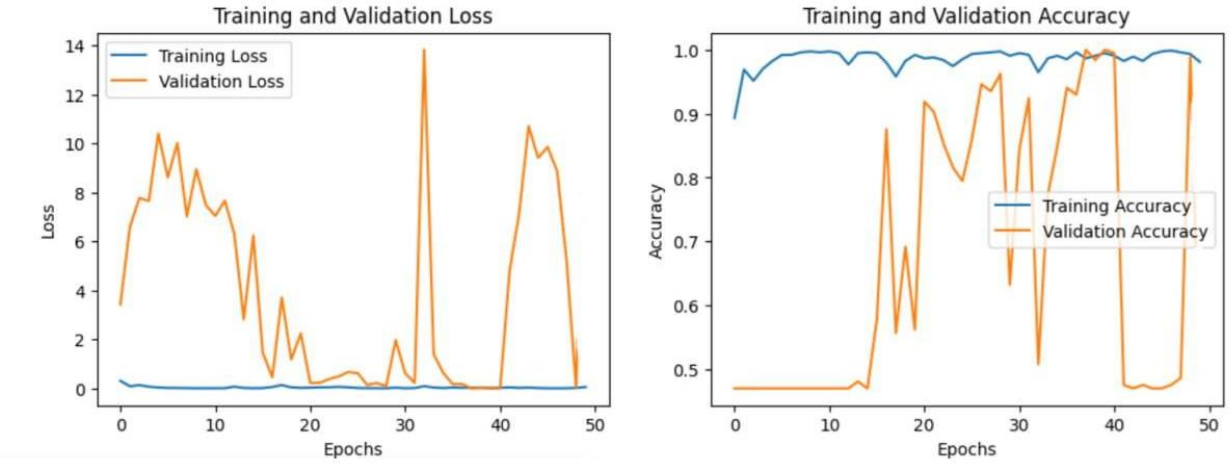
Table 6: Accuracy score with different numbers of CNN layers

Convolutional Layers	Test Accuracy	Validation Accuracy
One CONV2D	0.900	0.919
Two CONV2D	1.000	1.000
Three CONV2D	0.950	0.973
Four CONV2D	0.975	1.000
Five CONV2D	0.950	1.000
Six CONV2D	0.975	0.908

Pic13- Network evaluation results with different number of convolution layers



Pic14-Loss and accuracy diagram for the training and validation data of the network with four convolution layers



Pic15-Loss and accuracy diagram for the training and validation data of the network with changing the sequential model to functional

References:

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[6] A. Narin, C. Kaya, and Z. Pamuk, "Automatic detection of coronavirus disease (COVID-19) using X-ray images and deep convolutional neural networks," *Pattern Anal Applic*, vol. 24, no. 3, pp. 1207–1220, Aug. 2021, doi: 10.1007/s10044-021-00984-y.

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