

# **COVID-19 With deep learning**

## **TEAM 18**

- **Mohammed Afify Amer (2015170344) (sec 5)**
- **Mahmoud Ezzat Mahmoud (2015170380) (sec 5)**
- **Mohamed Ahmed Abdel Wahab (2015170303) (sec 4)**
- **Sherif Mohamed Ibrahim (2015170200) (sec 3)**
- **Taha Khaled Taha (2015170209) (sec 3)**

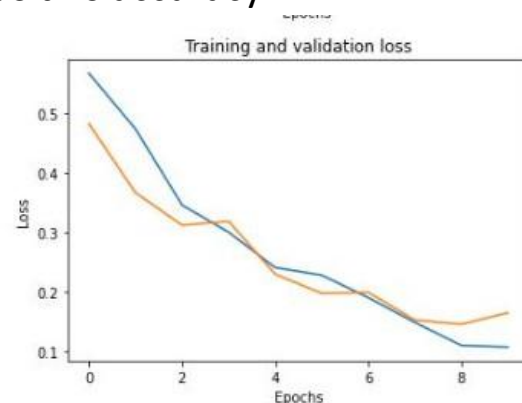
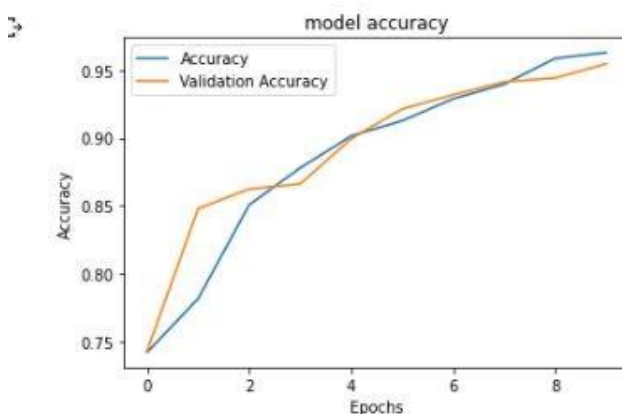
# CNN

input_2 (InputLayer)	(None, 224, 224, 1)	0
conv2d_10 (Conv2D)	(None, 224, 224, 32)	832
conv2d_11 (Conv2D)	(None, 224, 224, 32)	25632
max_pooling2d_5 (MaxPooling2)	(None, 112, 112, 32)	0
conv2d_12 (Conv2D)	(None, 112, 112, 64)	51264
conv2d_13 (Conv2D)	(None, 112, 112, 64)	102464
max_pooling2d_6 (MaxPooling2)	(None, 56, 56, 64)	0
conv2d_14 (Conv2D)	(None, 56, 56, 128)	204928
conv2d_15 (Conv2D)	(None, 56, 56, 128)	409728
max_pooling2d_7 (MaxPooling2)	(None, 28, 28, 128)	0
conv2d_16 (Conv2D)	(None, 28, 28, 64)	204864
conv2d_17 (Conv2D)	(None, 28, 28, 64)	102464
max_pooling2d_8 (MaxPooling2)	(None, 14, 14, 64)	0
conv2d_18 (Conv2D)	(None, 14, 14, 32)	51232
conv2d_19 (Conv2D)	(None, 14, 14, 32)	25632
max_pooling2d_9 (MaxPooling2)	(None, 7, 7, 32)	0
flatten_1 (Flatten)	(None, 1568)	0
dense_2 (Dense)	(None, 1024)	1606656
dropout_1 (Dropout)	(None, 1024)	0
dense_3 (Dense)	(None, 2)	2050

## The architecture

Input -> [Conv , relu -> conv, relu -> MAXPool] X5 -> FC,Relu -> Dropout (0.5) -> FC, softmax

we tried deferent numbers of filters on every conv block and the final one give us this accuracy



the accuracy on Kaggle is:

[submit-2 \(2\).csv](#)

2 days ago by muhaabdelwahab

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0.77173

0.82125

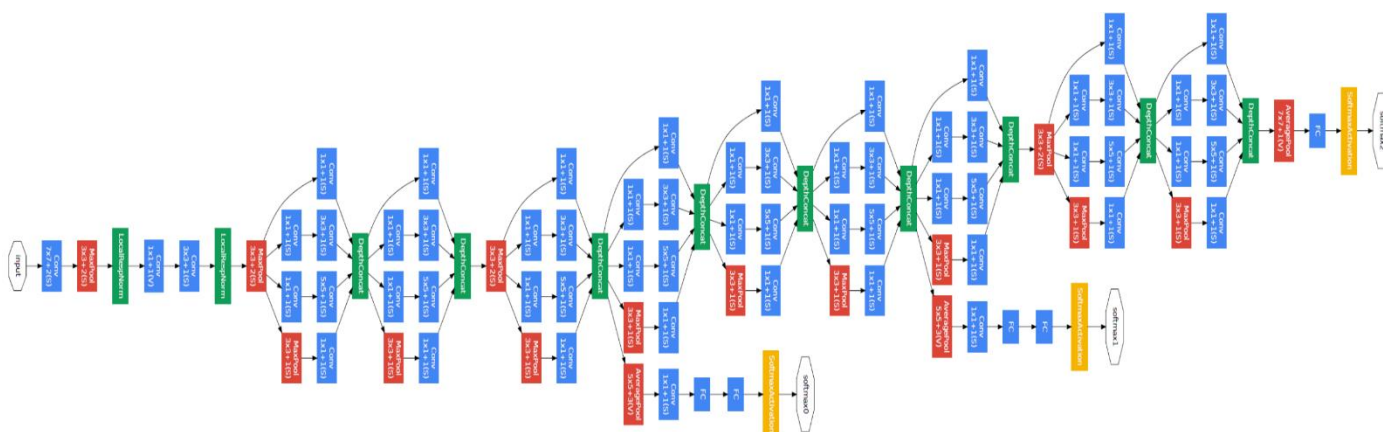


This architecture is the one that gave us the highest accuracy until now

We trayed deferent number of filters on every block but the one that we using now is the best so far .

## Inception

### GOOGLE NET

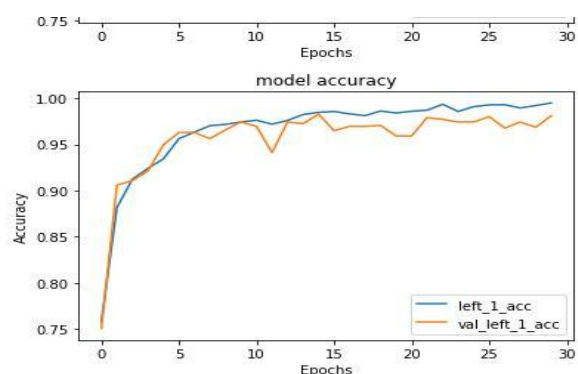


left_1 (Dense)	(None, 2)	2050	dropout[0][0]
left_2 (Dense)	(None, 2)	2050	dropout_1[0][0]
final_output (Dense)	(None, 2)	2050	dropout_2[0][0]

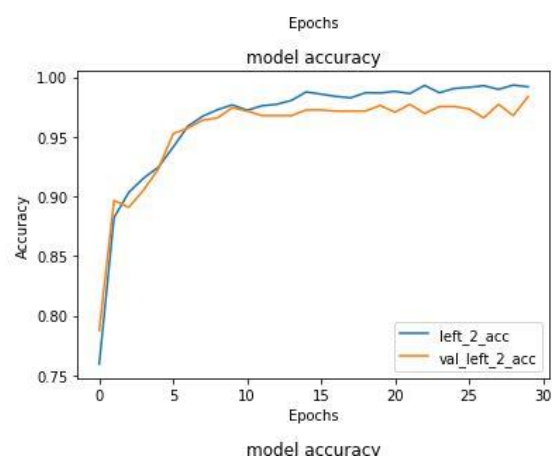
Total params: 8,731,446  
Trainable params: 8,731,446  
Non-trainable params: 0

## the accuracy chart by epoch

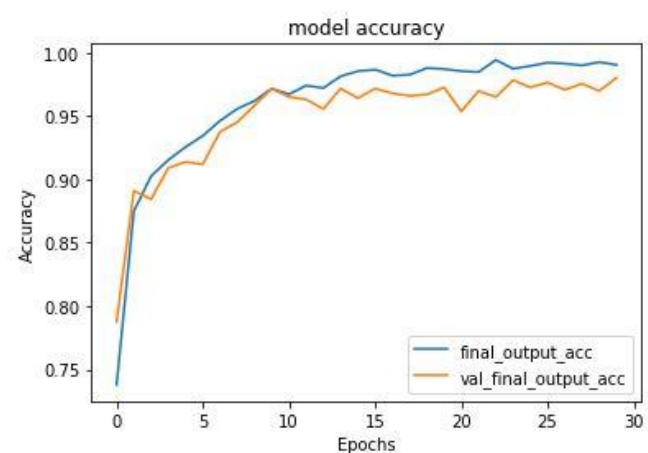
for the first lift branch



## For the second branch



## For the final output



## The 3 accuracies with 30 epochs:

<a href="#">submit_output (2).csv</a> 2 days ago by mohamed afifi <a href="#">add submission details</a>	0.72826	0.74396	<input type="checkbox"/>
<a href="#">submit_left2 (2).csv</a> 2 days ago by mohamed afifi <a href="#">add submission details</a>	0.73913	0.74879	<input type="checkbox"/>
<a href="#">submit_left1 (2).csv</a> 2 days ago by mohamed afifi <a href="#">add submission details</a>	0.74637	0.74879	<input type="checkbox"/>

## The 3 accuracies with 10 epochs:

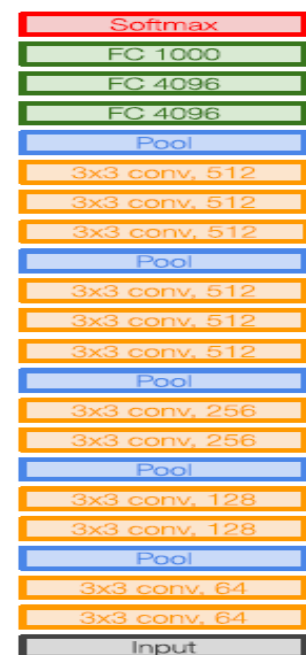
<a href="#">submit_output (1).csv</a> 2 days ago by mohamed afifi <a href="#">add submission details</a>	0.73550	0.75845	<input type="checkbox"/>
<a href="#">submit_left2 (1).csv</a> 2 days ago by mohamed afifi <a href="#">add submission details</a>	0.74275	0.75845	<input type="checkbox"/>
<a href="#">submit_left1 (1).csv</a> 2 days ago by mohamed afifi <a href="#">add submission details</a>	0.75724	0.78260	<input type="checkbox"/>

The accuracy on Kaggle of the three outputs with 5 epochs (the highest):

<a href="#">submit_output.csv</a> 2 days ago by mohamed afifi <a href="#">add submission details</a>	0.77173	0.78985	<input type="checkbox"/>
<a href="#">submit_left2.csv</a> 2 days ago by mohamed afifi <a href="#">add submission details</a>	0.78260	0.78985	<input type="checkbox"/>
<a href="#">submit_left1.csv</a> 2 days ago by mohamed afifi <a href="#">add submission details</a>	0.77173	0.80434	<input type="checkbox"/>

## VGG 16:

Layer (type)	Output Shape	Param #
input_1 (InputLayer)	(None, 224, 224, 1)	0
conv2d (Conv2D)	(None, 224, 224, 64)	640
conv2d_1 (Conv2D)	(None, 224, 224, 64)	36928
max_pooling2d (MaxPooling2D)	(None, 112, 112, 64)	0
conv2d_2 (Conv2D)	(None, 112, 112, 128)	73856
conv2d_3 (Conv2D)	(None, 112, 112, 128)	147584
max_pooling2d_1 (MaxPooling2D)	(None, 56, 56, 128)	0
conv2d_4 (Conv2D)	(None, 56, 56, 256)	295168
conv2d_5 (Conv2D)	(None, 56, 56, 256)	590080
conv2d_6 (Conv2D)	(None, 56, 56, 256)	590080
max_pooling2d_2 (MaxPooling2D)	(None, 28, 28, 256)	0
conv2d_7 (Conv2D)	(None, 28, 28, 512)	1180160
conv2d_8 (Conv2D)	(None, 28, 28, 512)	2359808
conv2d_9 (Conv2D)	(None, 28, 28, 512)	2359808

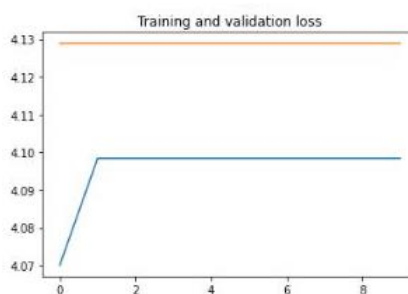
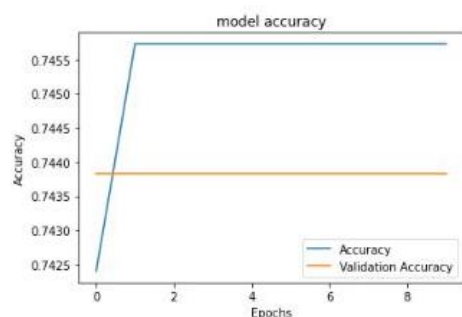


VGG16

max_pooling2d_3 (MaxPooling2)	(None, 14, 14, 512)	0
conv2d_10 (Conv2D)	(None, 14, 14, 512)	2359808
conv2d_11 (Conv2D)	(None, 14, 14, 512)	2359808
conv2d_12 (Conv2D)	(None, 14, 14, 512)	2359808
max_pooling2d_4 (MaxPooling2)	(None, 7, 7, 512)	0
flatten (Flatten)	(None, 25088)	0
dense (Dense)	(None, 4096)	102764544
dropout (Dropout)	(None, 4096)	0
dense_1 (Dense)	(None, 4096)	16781312
dropout_1 (Dropout)	(None, 4096)	0
dense_2 (Dense)	(None, 1000)	4097000
dense_3 (Dense)	(None, 2)	2002

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Total params: 138,358,394  
 Trainable params: 138,358,394  
 Non-trainable params: 0



-We have a problem with the accuracy on this model we tray with it all the possible combinations and we trayed deferent learning rates and the accuracy didn't change by the epoch, every epoch has the same accuracy of 74.28% and we trayed so hard to solve this problem but we failed to do that, sorry .

-and there is the accuracy on Kaggle

[submit \(7\).csv](#)

3 days ago by [mohamed afifi](#)

[add submission details](#)

0.61956

0.66908

