COVID-19 DETECTION SYSTEM

THEME: DEEP LEARNING, COMPUTER VISION AND IMAGE PROCESSING

DEVELOPED BY,
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SOLUTION LINKS & TECHNOLOGIES

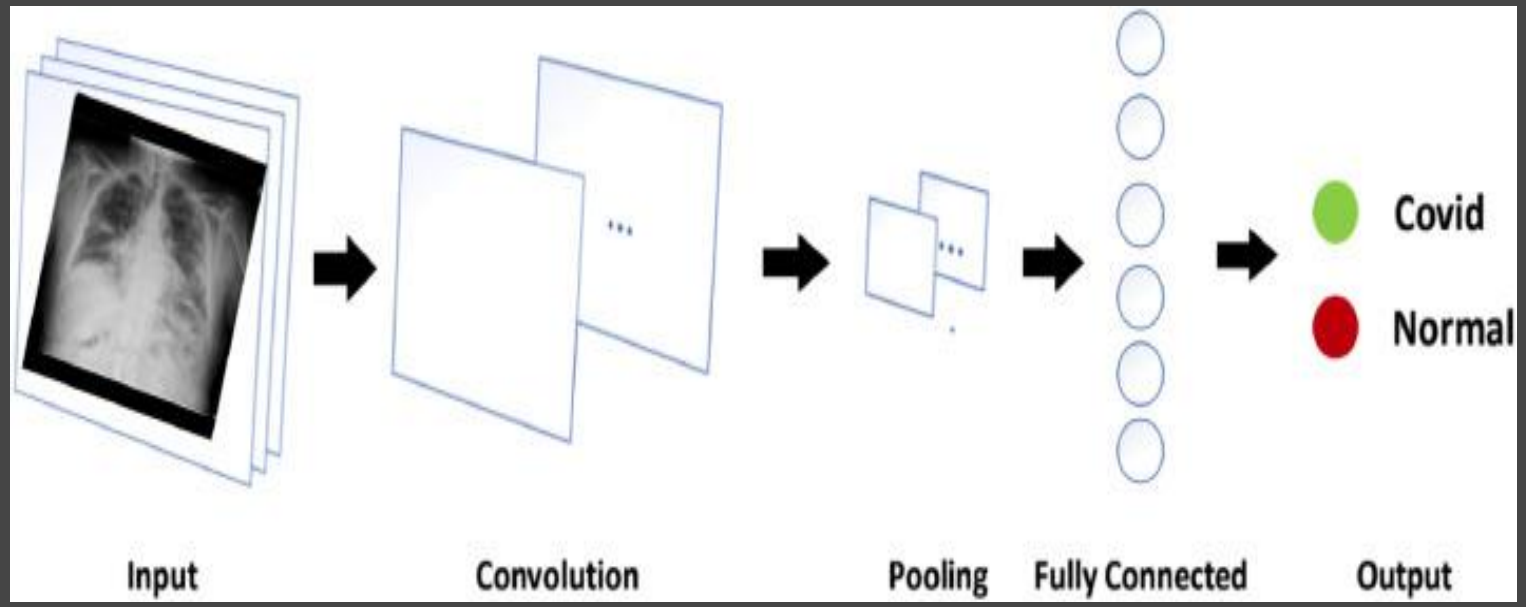
- https://awschalst1988.notebook.us-east-1.sagemaker.aws/lab
- https://github.com/chalst1988/Competitions

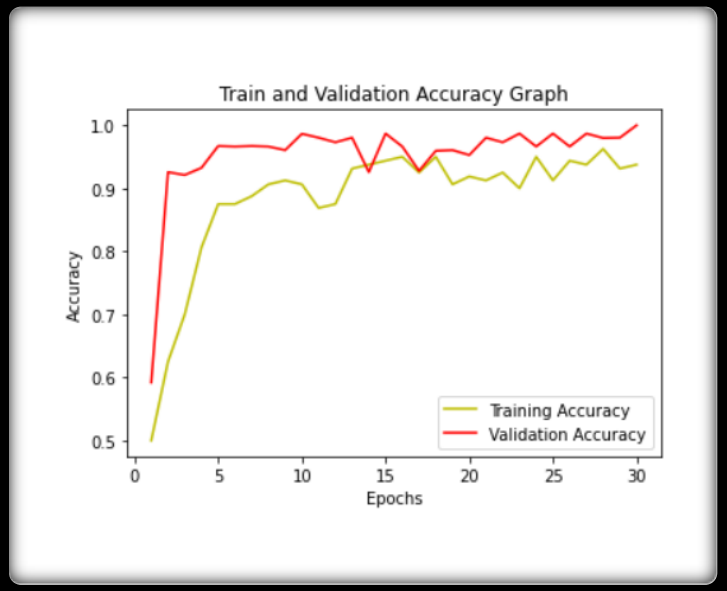
- Amazon Web Services (AWS)
- **Amazon Sage Maker Studio**
- Jupyter Lab
- Notebook
- Python
- Deep Learning, Tensorflow, Keras

ABSTRACT & APPROACH

X-ray images are given in jpeg, jpg and png file formats. Folder structure contains Train and Test folders. Each folder is segregated into Covid and Normal folders as shown below. Train contains 224 images and Test contains 60 images.

- Initially a Convolutional Neural Network was build to train the images with pooling, dropout, flatten and dense layers.
- Secondly results were predicted as 0 and 1 for the given train images. {'Covid': 0, 'Normal': 1}
- Finally labelling on image were done as "COVID" or "NORMAL" based on the predicted classes.

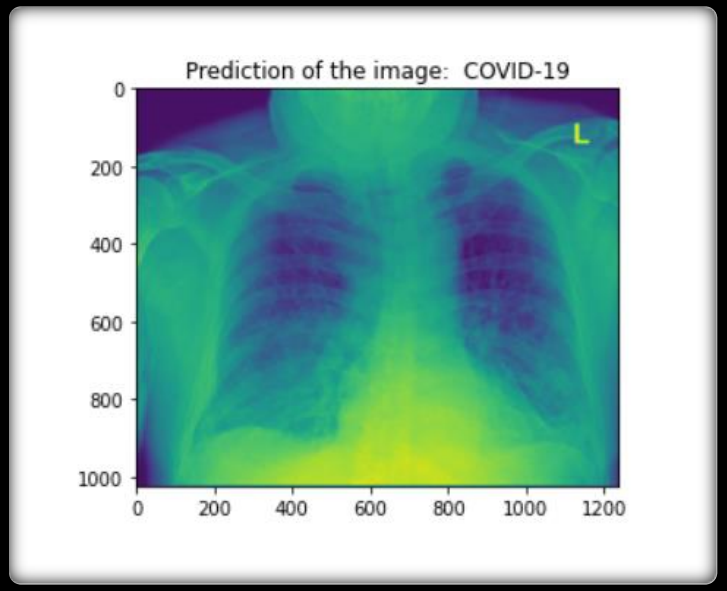


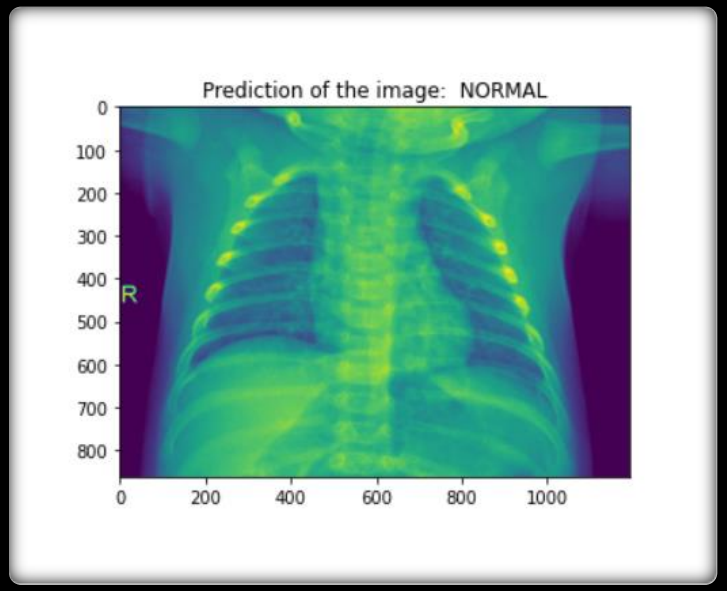


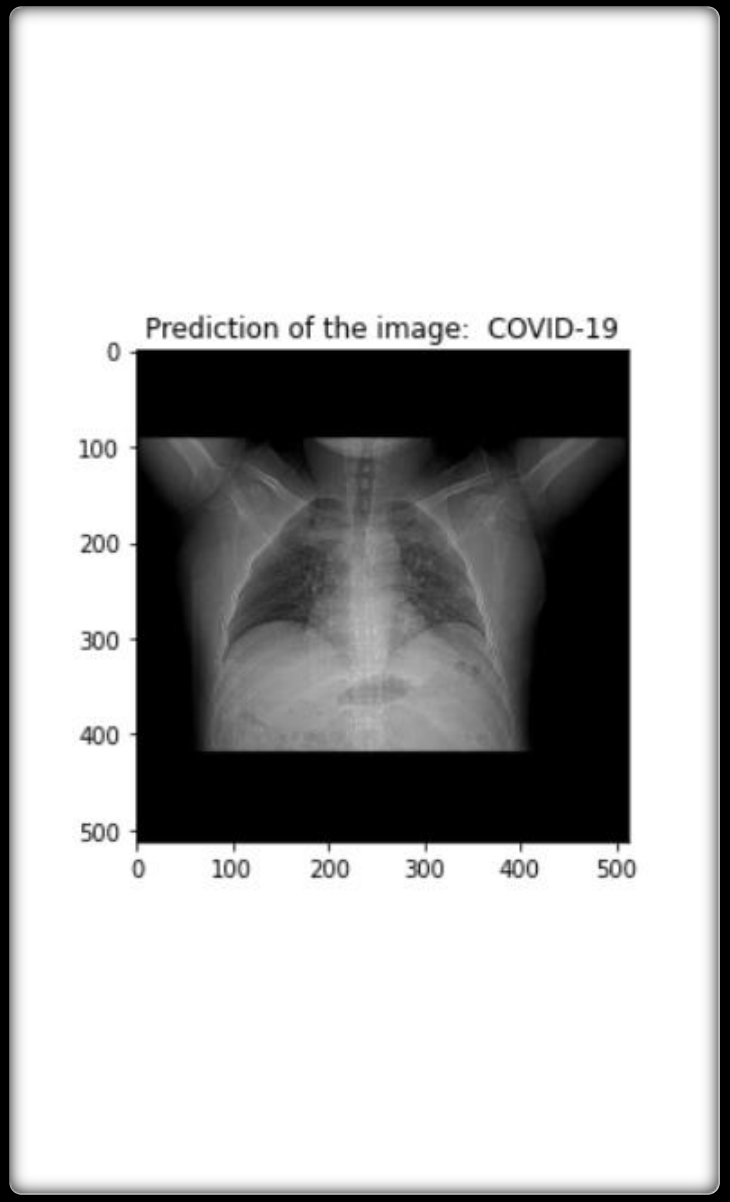

```
print(model.summary())
```

```
Model: "sequential_1"
_________________________________________________________________
Layer (type)                 Output Shape              Param #
=================================================================
conv2d_1 (Conv2D)            (None, 222, 222, 32)      896
_________________________________________________________________
conv2d_2 (Conv2D)            (None, 220, 220, 128)     36992
_________________________________________________________________
max_pooling2d_1 (MaxPooling2 (None, 110, 110, 128)     0
_________________________________________________________________
dropout_1 (Dropout)          (None, 110, 110, 128)     0
_________________________________________________________________
conv2d_3 (Conv2D)            (None, 108, 108, 64)      73792
_________________________________________________________________
max_pooling2d_2 (MaxPooling2 (None, 54, 54, 64)        0
_________________________________________________________________
dropout_2 (Dropout)          (None, 54, 54, 64)        0
_________________________________________________________________
conv2d_4 (Conv2D)            (None, 52, 52, 128)       73856
_________________________________________________________________
max_pooling2d_3 (MaxPooling2 (None, 26, 26, 128)       0
_________________________________________________________________
dropout_3 (Dropout)          (None, 26, 26, 128)       0
_________________________________________________________________
flatten_1 (Flatten)          (None, 86528)             0
_________________________________________________________________
dense_1 (Dense)              (None, 64)                5537856
_________________________________________________________________
dropout_4 (Dropout)          (None, 64)                0
_________________________________________________________________
dense_2 (Dense)              (None, 1)                 65
=================================================================
Total params: 5,723,457
Trainable params: 5,723,457
Non-trainable params: 0
_________________________________________________________________
None
```

MODEL SUMMARY & HISTORY PLOTS







VISUALIZE TEST X-RAY IMAGES