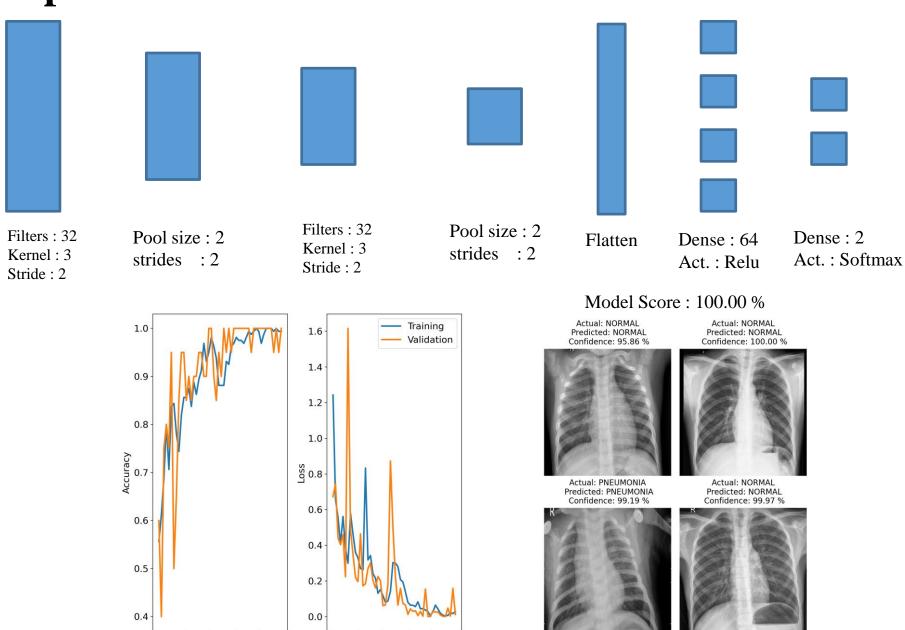
CS725 Project

- Pneumonia Classification using CNN
- All hyperparameter tuning results are included in this document

CNN - Epochs



30

10 20 Epochs 40 50

30

Epochs

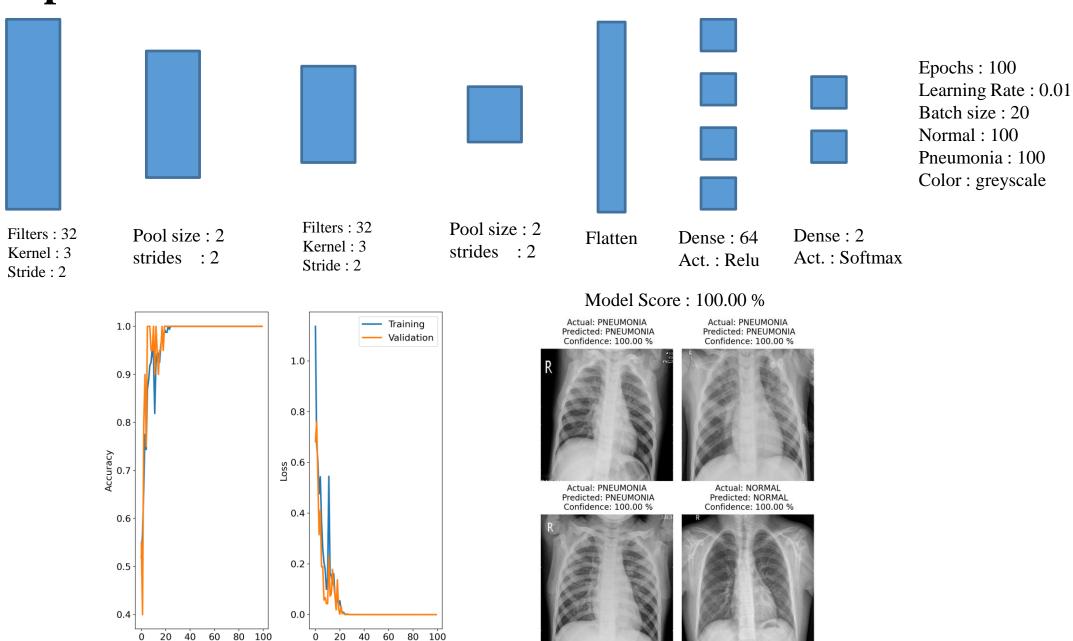
10 20 40 50

Epochs: 50

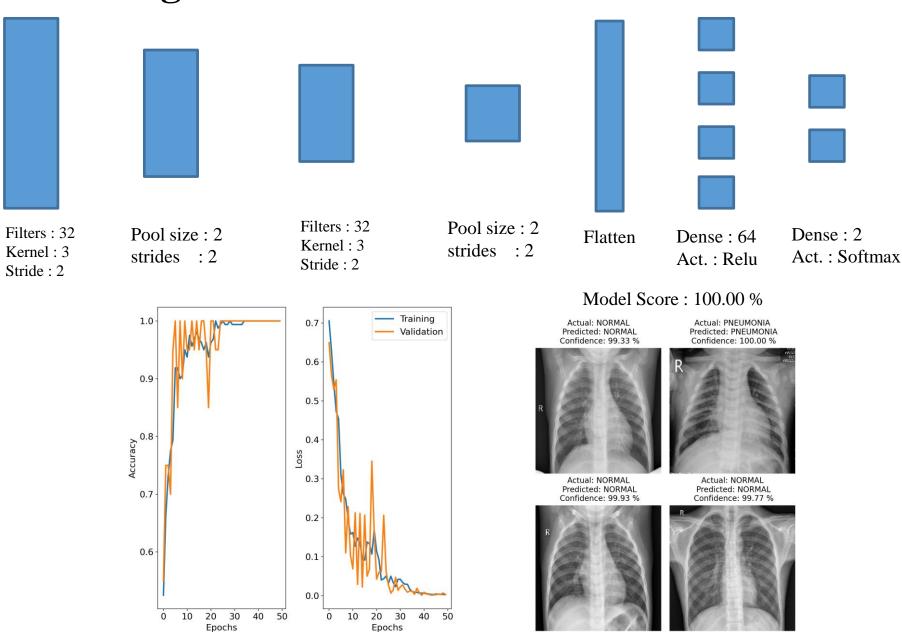
Batch size: 20 Normal : 100 Pneumonia: 100 Color: greyscale

CNN - Epochs

Epochs



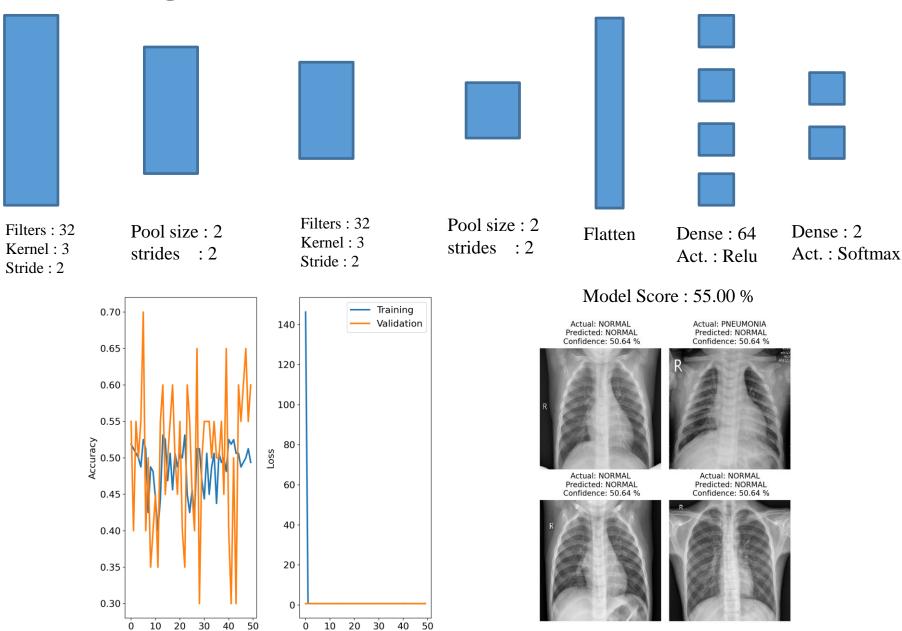
Epochs



Epochs: 50

Batch size: 20 Normal: 100 Pneumonia: 100 Color: greyscale

Epochs



Epochs

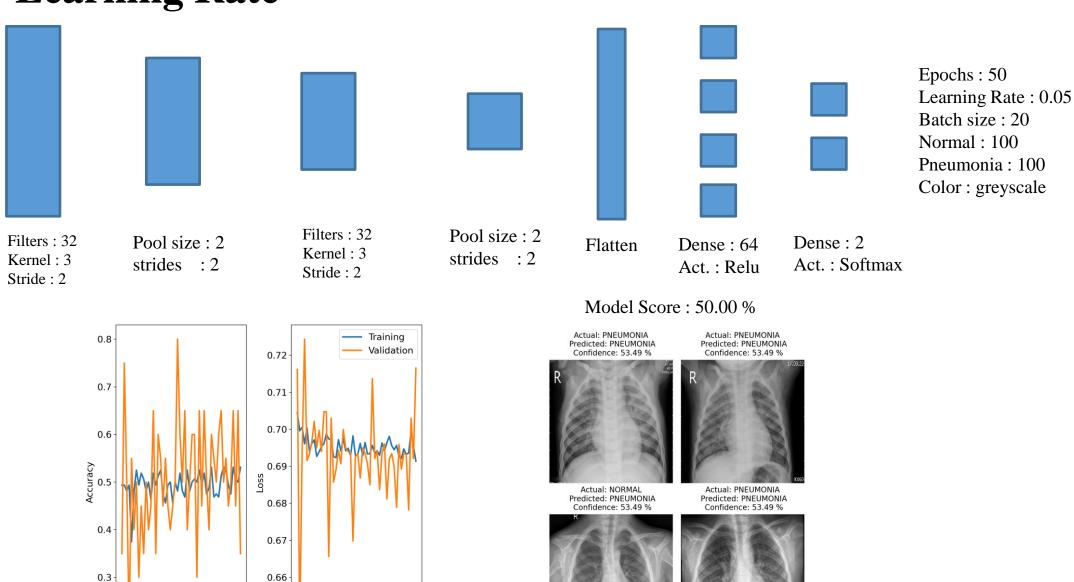
Epochs: 50

Batch size: 20 Normal: 100 Pneumonia: 100 Color: greyscale

0.2

20 30

Epochs



0.65

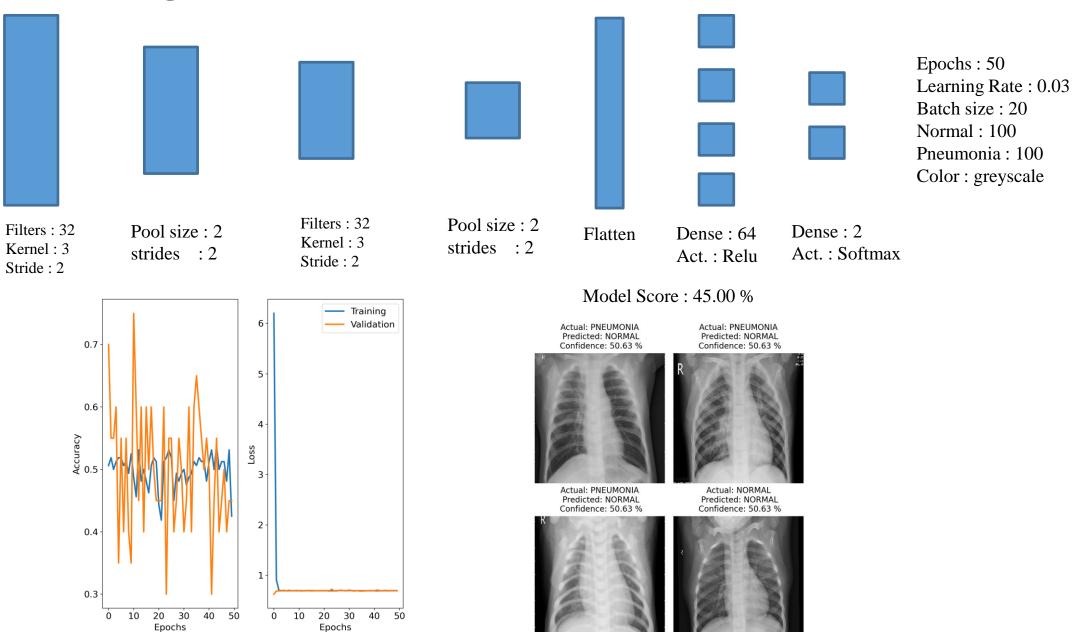
10

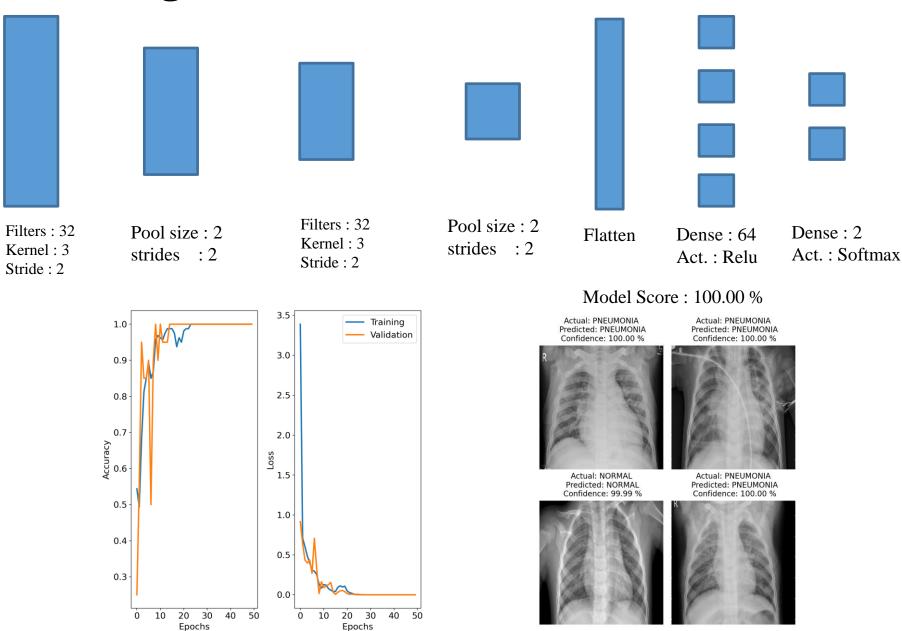
20 30

Epochs

40 50

40 50

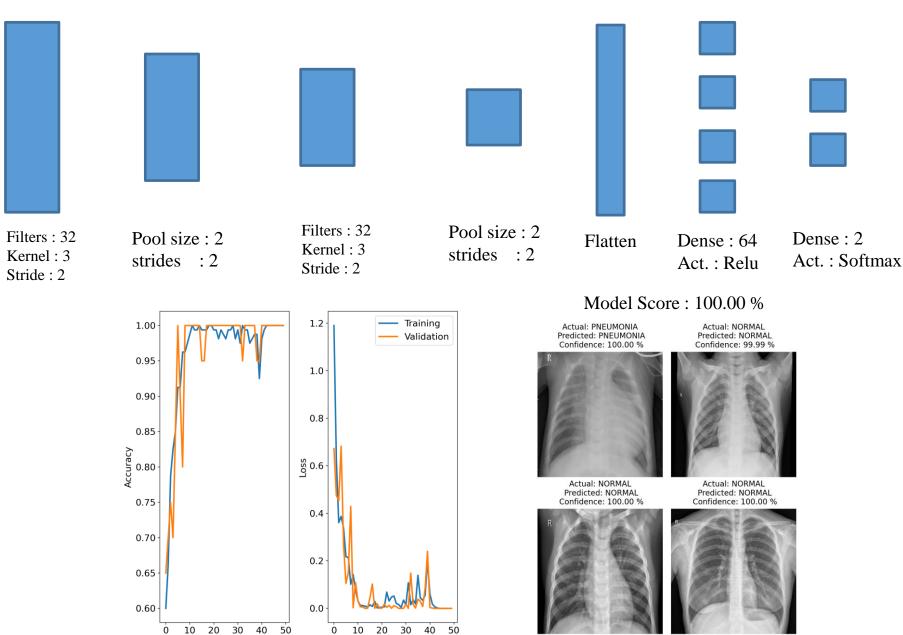




Epochs: 50

Batch size: 20 Normal: 100 Pneumonia: 100 Color: greyscale

CNN – Batch Size



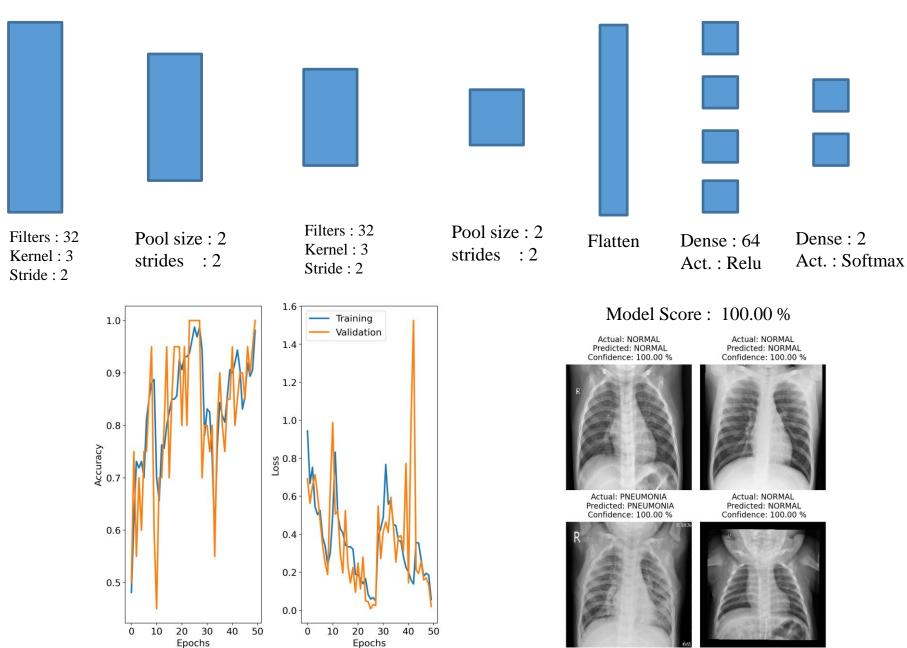
Epochs

Epochs

Epochs: 50

Batch size: 10 Normal: 100 Pneumonia: 100 Color: greyscale

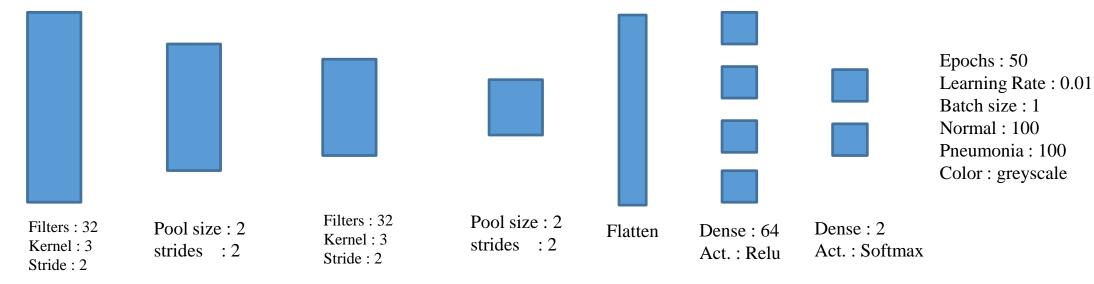
CNN – Batch Size

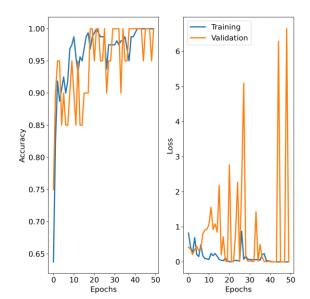


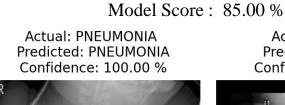
Epochs: 50

Batch size: 5 Normal: 100 Pneumonia: 100 Color: greyscale

CNN – Batch Size









Actual: NORMAL Predicted: NORMAL Confidence: 100.00 %



CNN - Convolutional layer

20 30

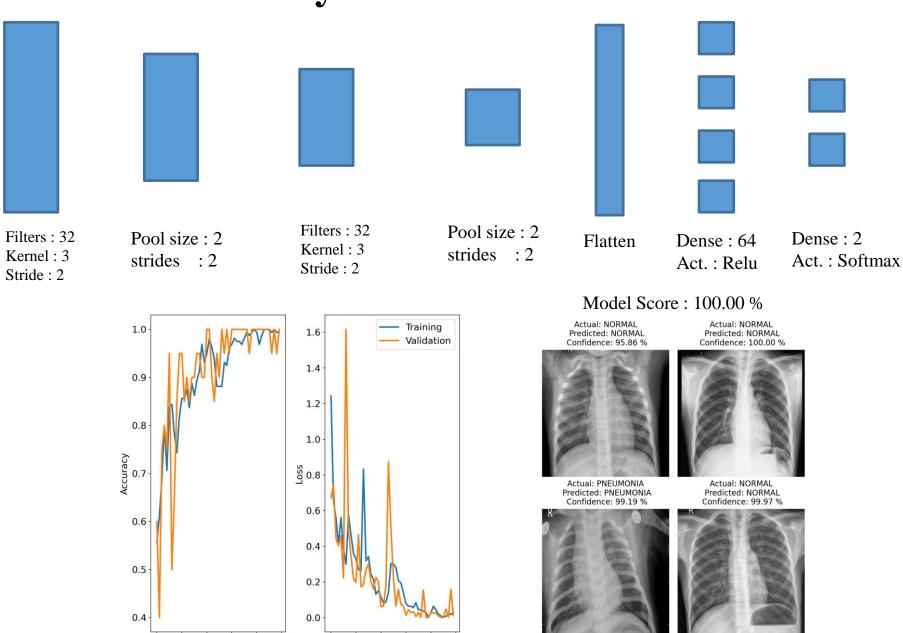
Epochs

40 50

10 20 30

Epochs

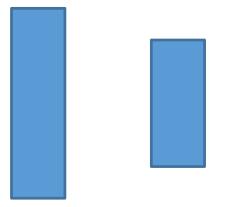
40



Epochs: 50

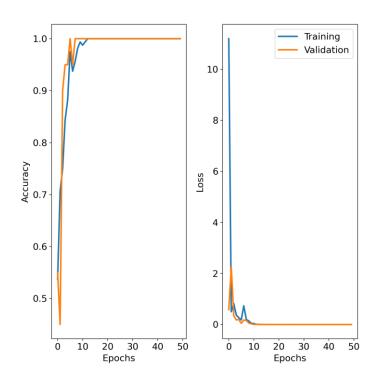
Batch size: 20 Normal: 100 Pneumonia: 100 Color: greyscale

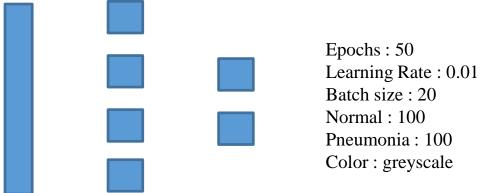
CNN – Convolutional layer



Filters: 32 Kernel: 3 Stride: 2

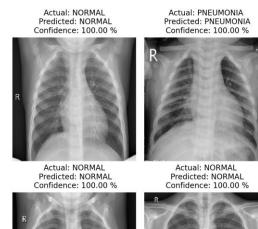
Pool size: 2 strides: 2



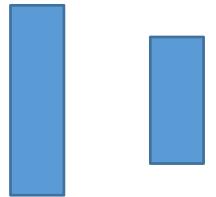


Flatten Dense: 64 Dense: 2

Act.: Relu Act.: Softmax

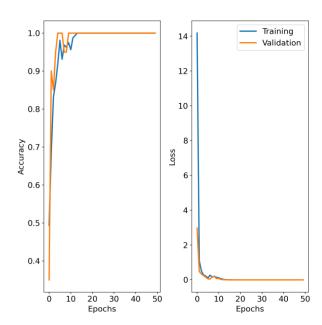


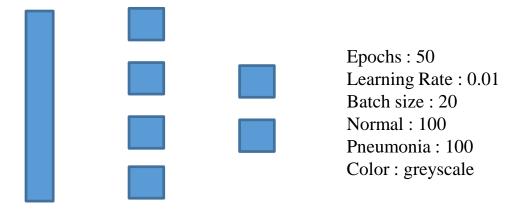
CNN – Filters



Filters: 16 Kernel: 3 Stride: 2

Pool size: 2 strides: 2





Dense: 2

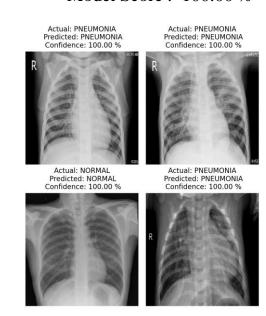
Act.: Softmax

Model Score: 100.00 %

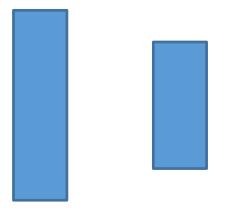
Dense: 64

Act.: Relu

Flatten

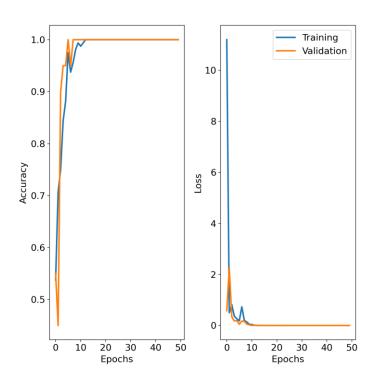


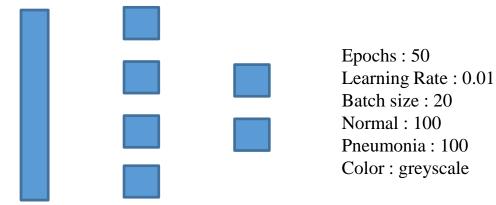
CNN – Filters (best)



Filters: 32 Kernel: 3 Stride: 2

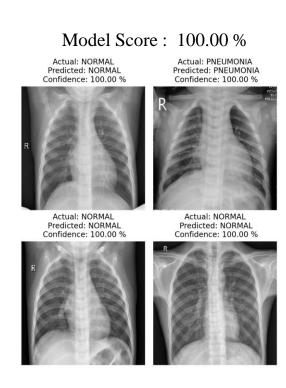
Pool size: 2 strides: 2





Dense: 2

Act.: Softmax

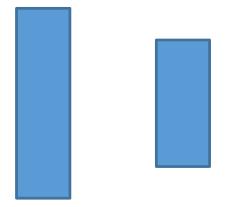


Dense: 64

Act.: Relu

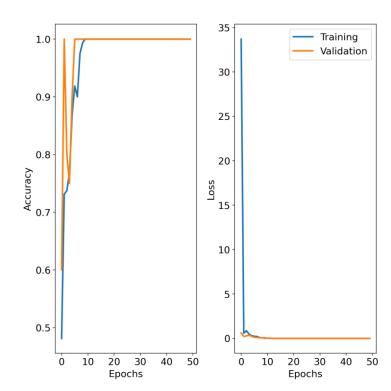
Flatten

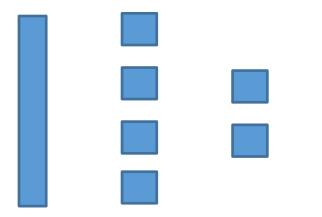
CNN – Filters



Filters: 64 Kernel: 3 Stride: 2

Pool size: 2 strides: 2





Epochs: 50

Learning Rate: 0.01

Batch size: 20 Normal: 100 Pneumonia: 100

Color: greyscale

Flatten Dense: 64 Dense: 2

Act.: Relu Act.: Softmax

Actual: NORMAL Predicted: NORMAL Confidence: 100.00 %

Actual: PNEUMONIA Predicted: PNEUMONIA Confidence: 100.00 %



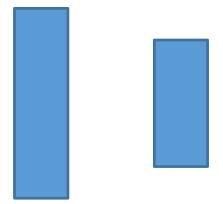
Actual: PNEUMONIA Predicted: PNEUMONIA Confidence: 100.00 %

Actual: PNEUMONIA Predicted: PNEUMONIA Confidence: 100.00 %





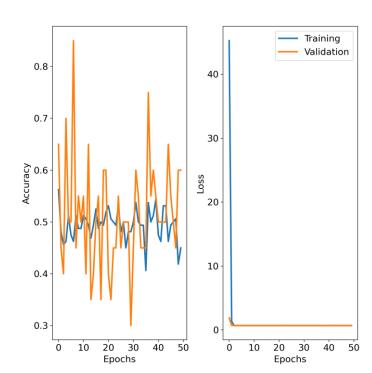
CNN – Filters

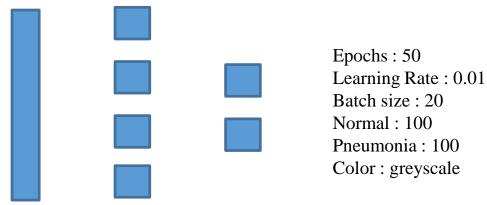


Filters: 128 Kernel: 3

Pool size: 2 strides: 2

Stride: 2





Dense: 2

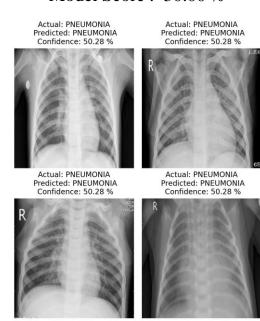
Act. : Softmax

Model Score: 30.00 %

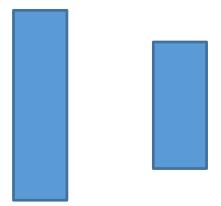
Dense: 64

Act.: Relu

Flatten

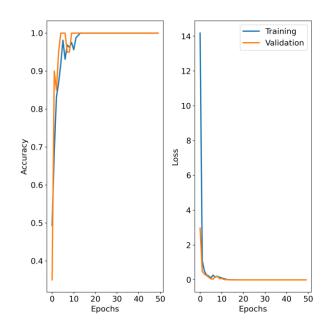


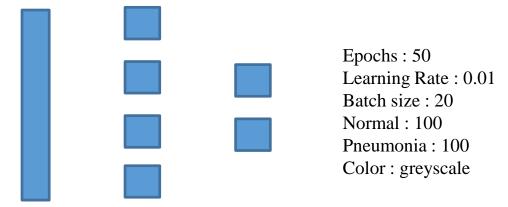
CNN – Neurons



Filters: 16 Kernel: 3 Stride: 2

Pool size: 2 strides: 2





Dense: 2

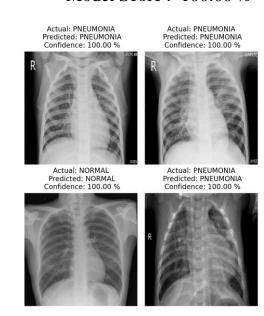
Act.: Softmax

Model Score: 100.00 %

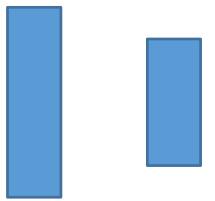
Dense: 64

Act.: Relu

Flatten

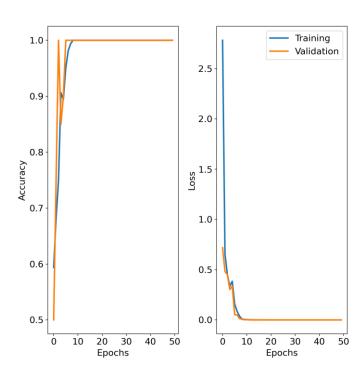


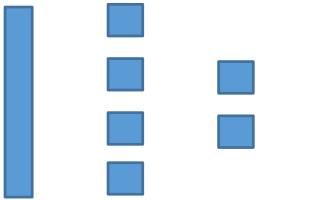
CNN – Neurons



Filters: 16 Kernel: 3 Stride: 2

Pool size: 2 strides: 2





Epochs: 50

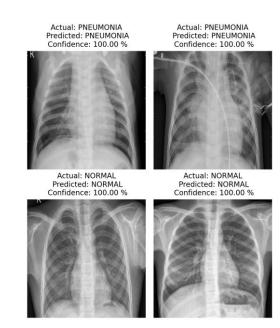
Learning Rate: 0.01

Batch size: 20 Normal: 100 Pneumonia: 100

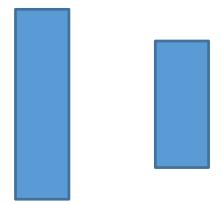
Color: greyscale

Flatten Dense: 32 Dense: 2

Act.: Relu Act.: Softmax

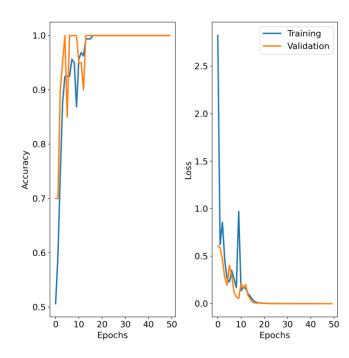


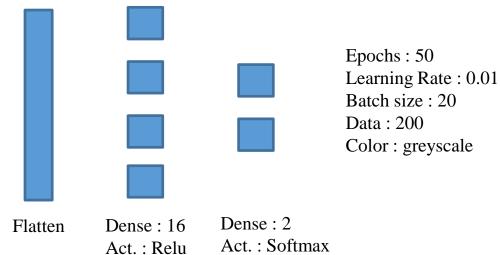
CNN – Neurons

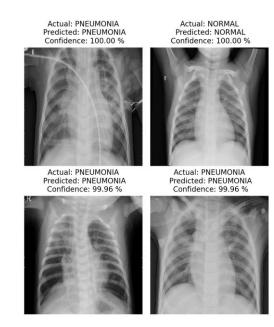


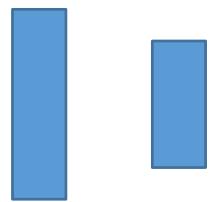
Filters: 16 Kernel: 3 Stride: 2

Pool size: 2 strides: 2



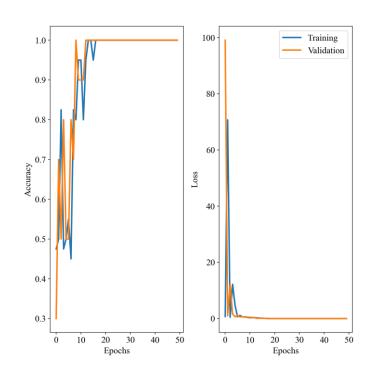


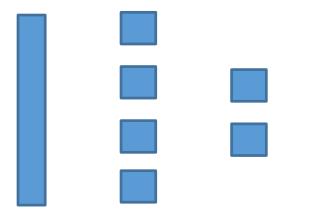




Filters: 32 Kernel: 3 Stride: 2

Pool size: 2 strides: 2





Epochs: 50

Learning Rate: 0.01

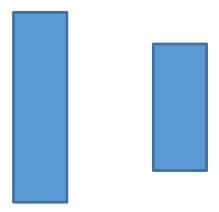
Batch size : NA

Data : 50

Color: greyscale

Flatten Dense: 32 Dense: 2

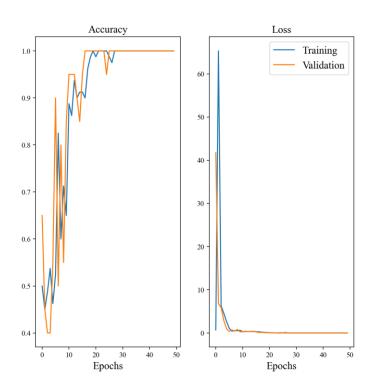
Act.: Relu Act.: Softmax

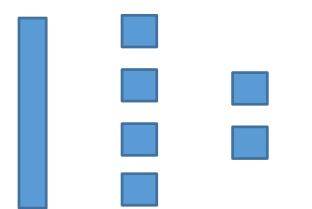


Filters: 32 Kernel: 3 Stride: 2

Pool size: 2

strides : 2





Epochs: 50

Learning Rate: 0.01 Batch size: NA

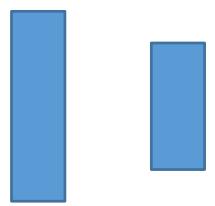
Data: 100

Color: greyscale

Flatten Dense: 32

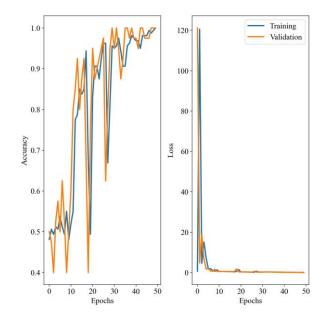
Act. : Softmax Act.: Relu

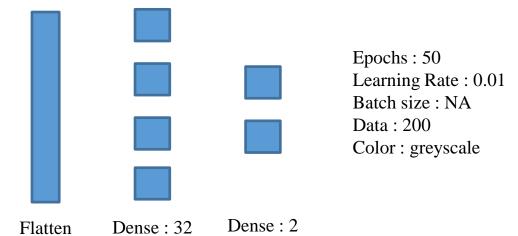
Dense: 2



Filters: 32 Kernel: 3 Stride: 2

Pool size: 2 strides: 2

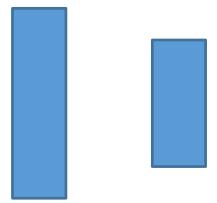




Act. : Softmax

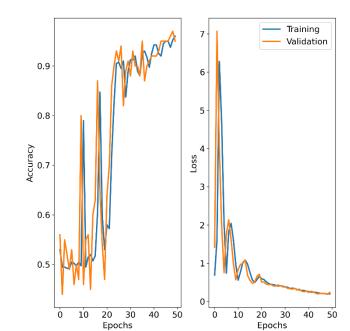
Model Score: 100.00 %

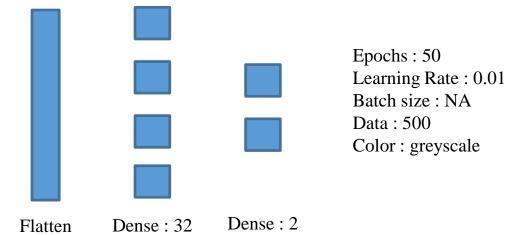
Act.: Relu



Filters: 32 Kernel: 3 Stride: 2

Pool size: 2 strides: 2

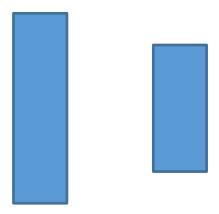




Act. : Softmax

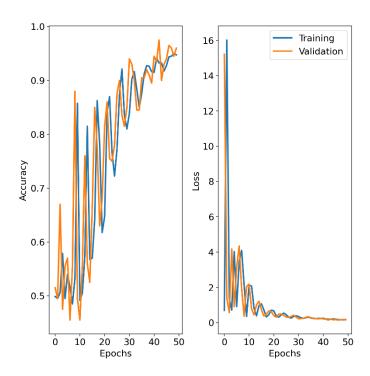
Model Score: 95.00 %

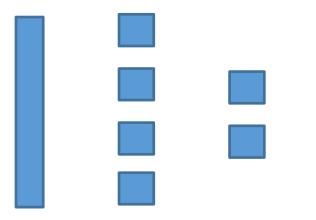
Act.: Relu



Filters: 32 Kernel: 3 Stride: 2

Pool size: 2 strides: 2





Epochs: 50

Learning Rate: 0.01 Batch size: NA

Data: 1000

Color: greyscale

Flatten Dense: 32

Act.: Relu Act.: Softmax

Dense: 2