



Group 1 Presents

IMAGE CLASSIFICATION

Detection of pneumonia
from PneumoniaMNIST

PROJECT BY:-

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CONTENTS:

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- TRAINING & VALIDATION
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- THANK YOU



Description:

Our dataset comprises of 5,856 pediatric chest X-Ray images.

Objective Of the Project:

The goal of this project is to build a CNN model that can accurately classify these images as either positive or negative for pneumonia using Binary Classification.

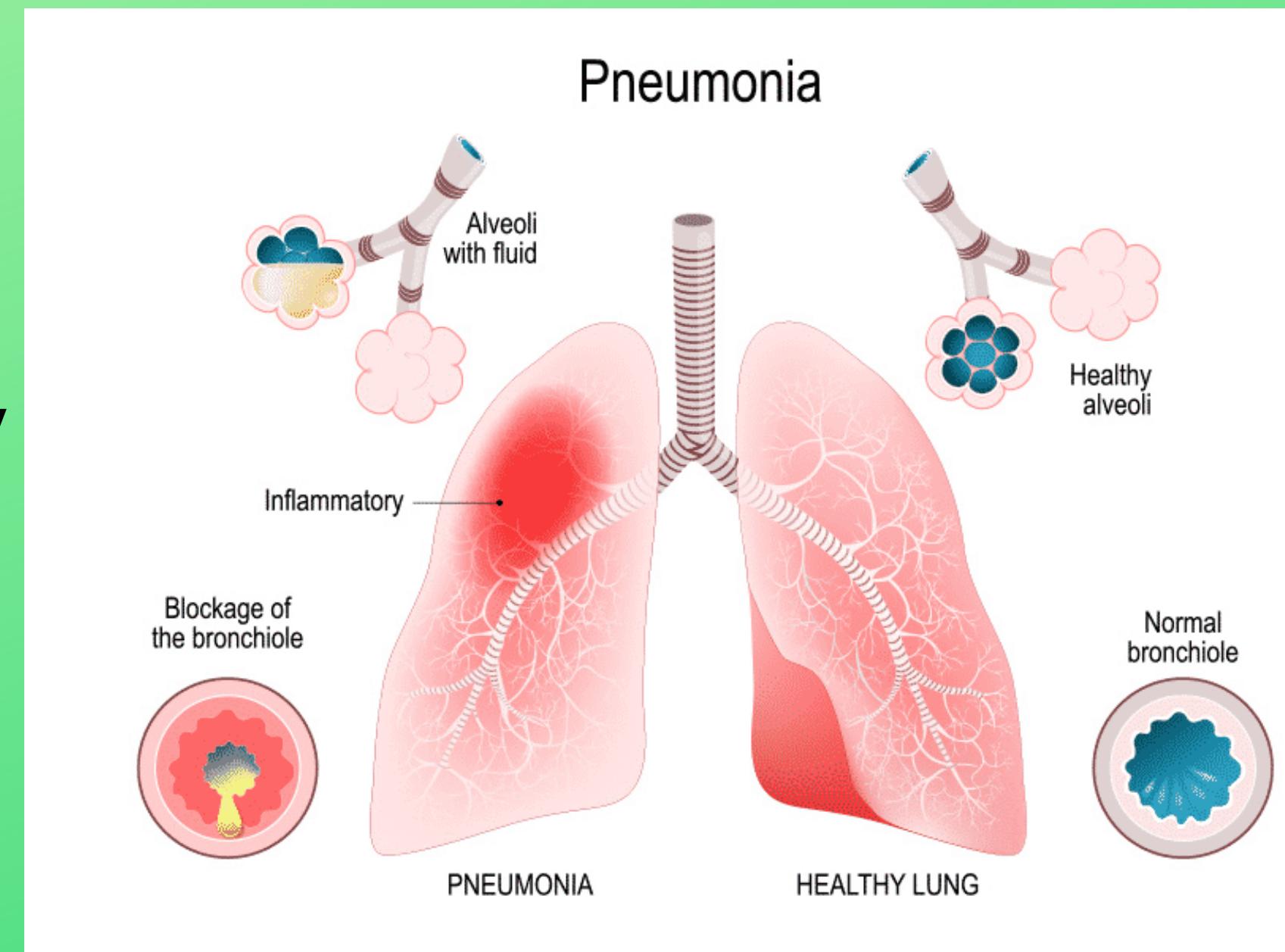
Meaning of labels:

'0': 'normal' '1': 'pneumonia'

INTRODUCTION:

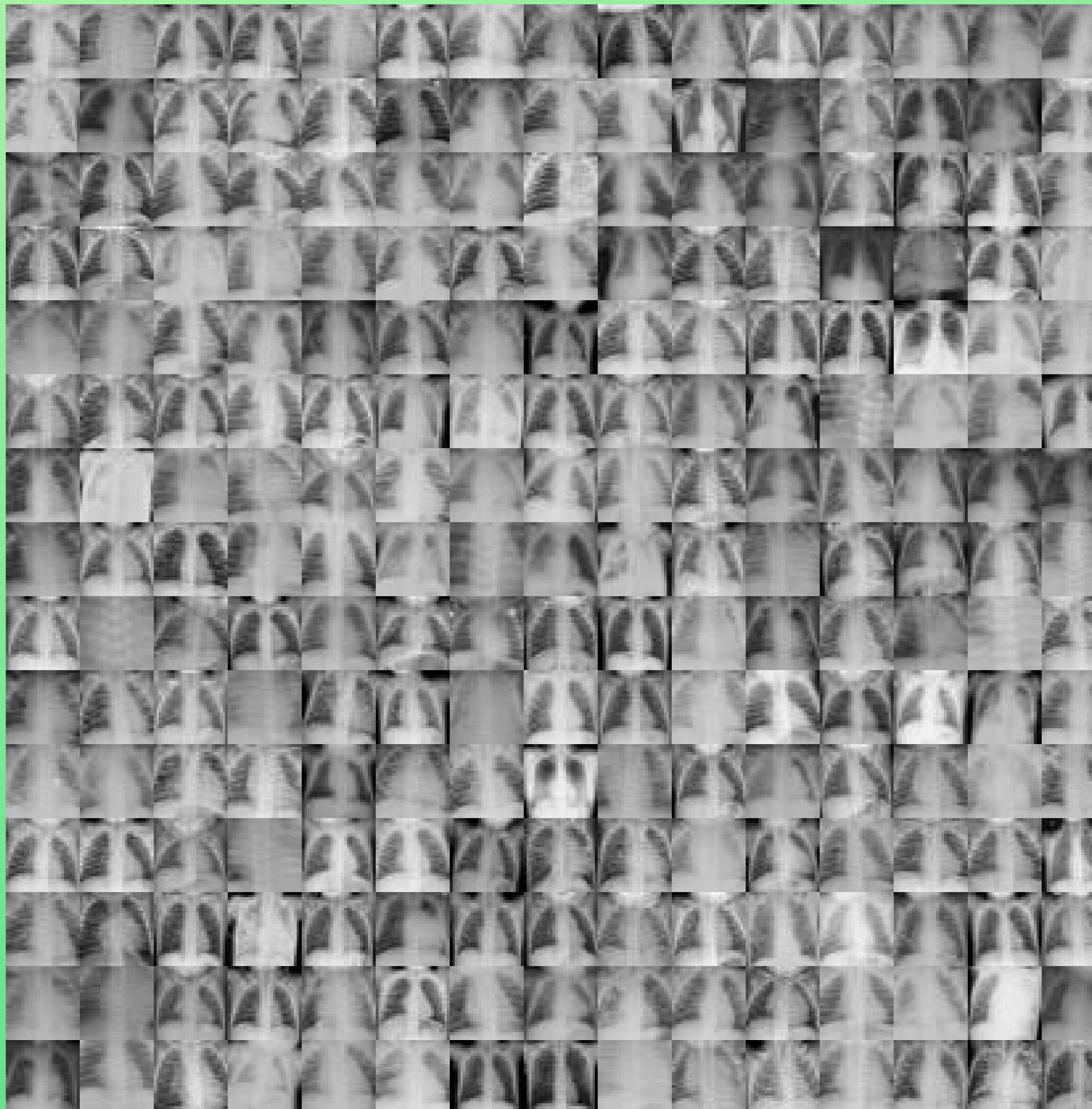
What is Pneumonia?

Pneumonia is an infection that inflames the air sacs in one or both lungs. The air sacs may fill with fluid or pus (purulent material), causing cough with phlegm or pus, fever, chills, and difficulty breathing. A variety of organisms, including bacteria, viruses and fungi, can cause pneumonia.



DATA PREPARATION:

DATA VISUALIZATION



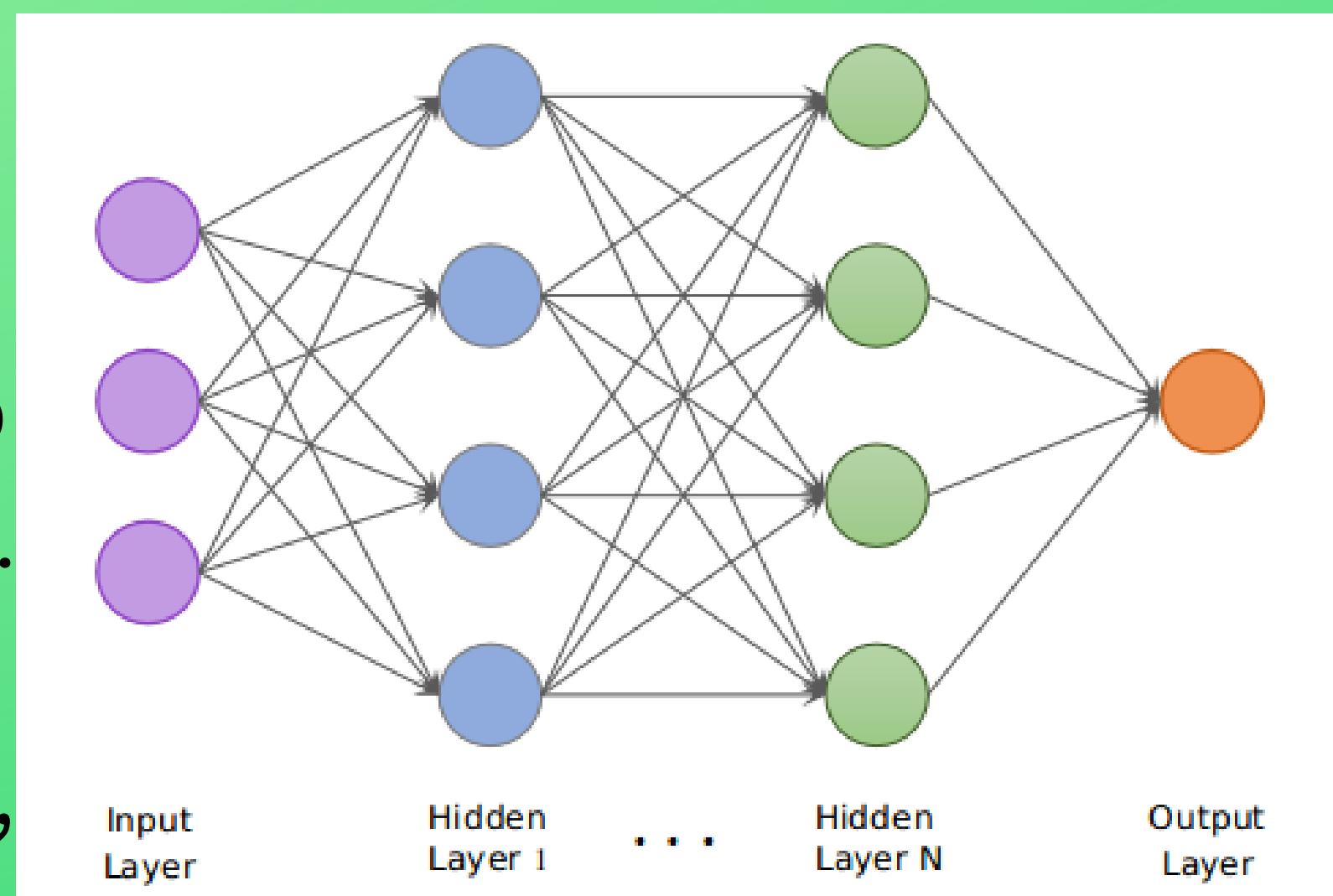
SPLITTING OF DATASET
INTO:

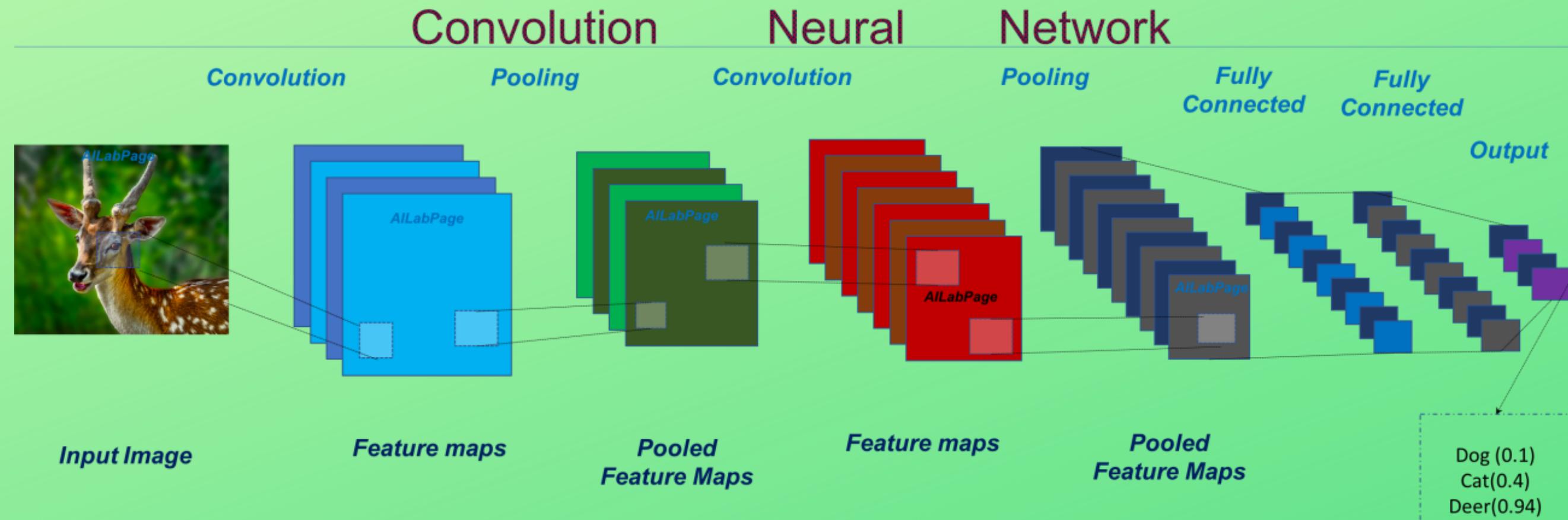
TRAINING IMAGES	4708
VALIDATION IMAGES	524
TESTING IMAGES	624

ARCHITECTURE SELECTION:

Convolutional Neural Network

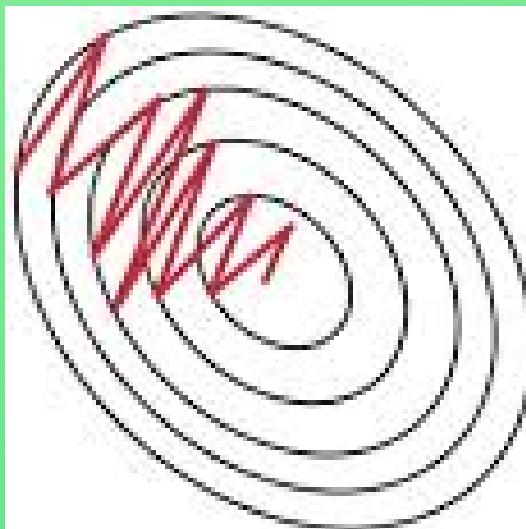
- A network architecture for deep learning that learns directly from data.
- Useful for finding patterns in images to recognize objects, classes, and categories.
- Quite effective for classifying audio, time-series, and signal data.



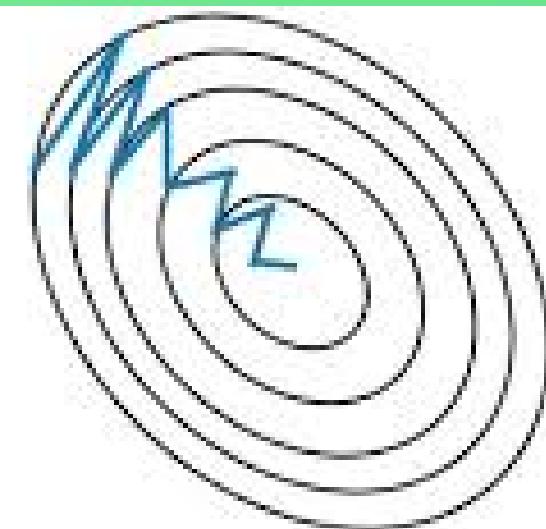


OPTIMIZERS USED:

SGD

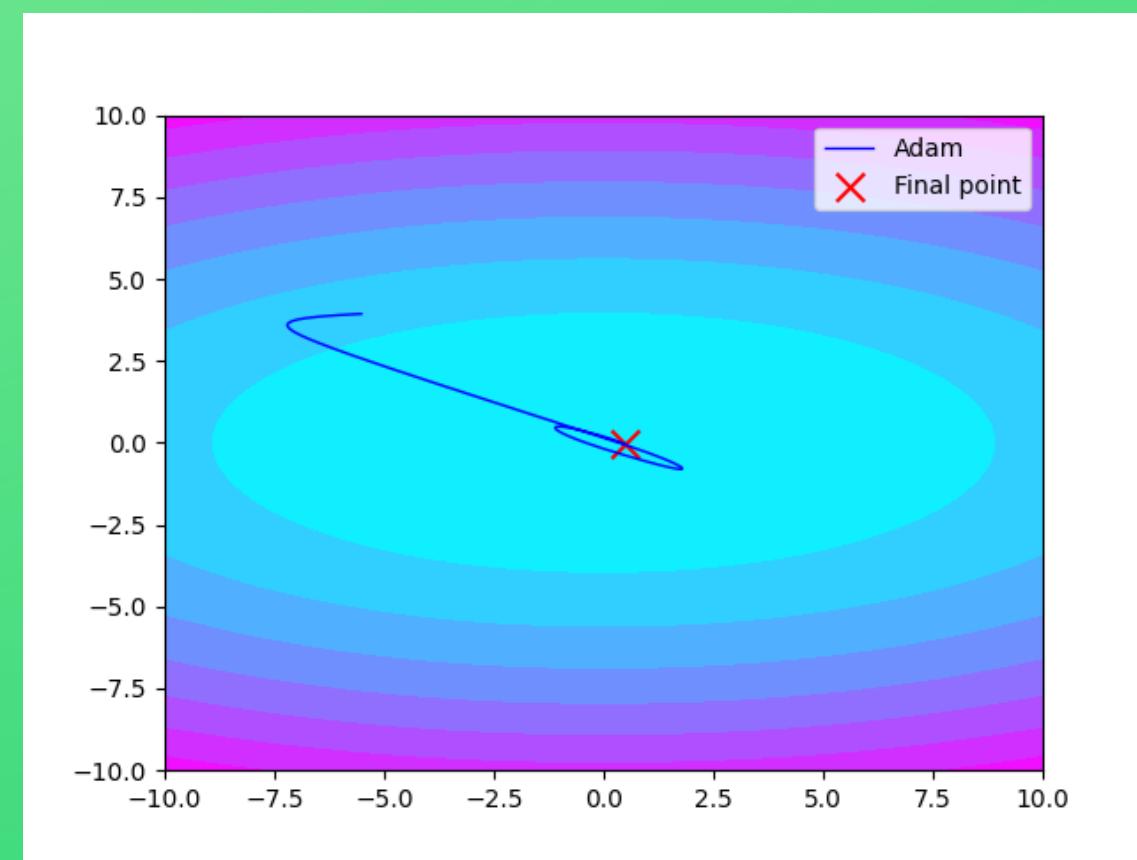


Stochastic Gradient
Descent without
Momentum



Stochastic Gradient
Descent with
Momentum

ADAM



TRAINING AND VALIDATION:

SGD OPTIMIZER:

```
Test set: Avg. loss: 0.1179, Accuracy: 9630/10000 (96%)
```

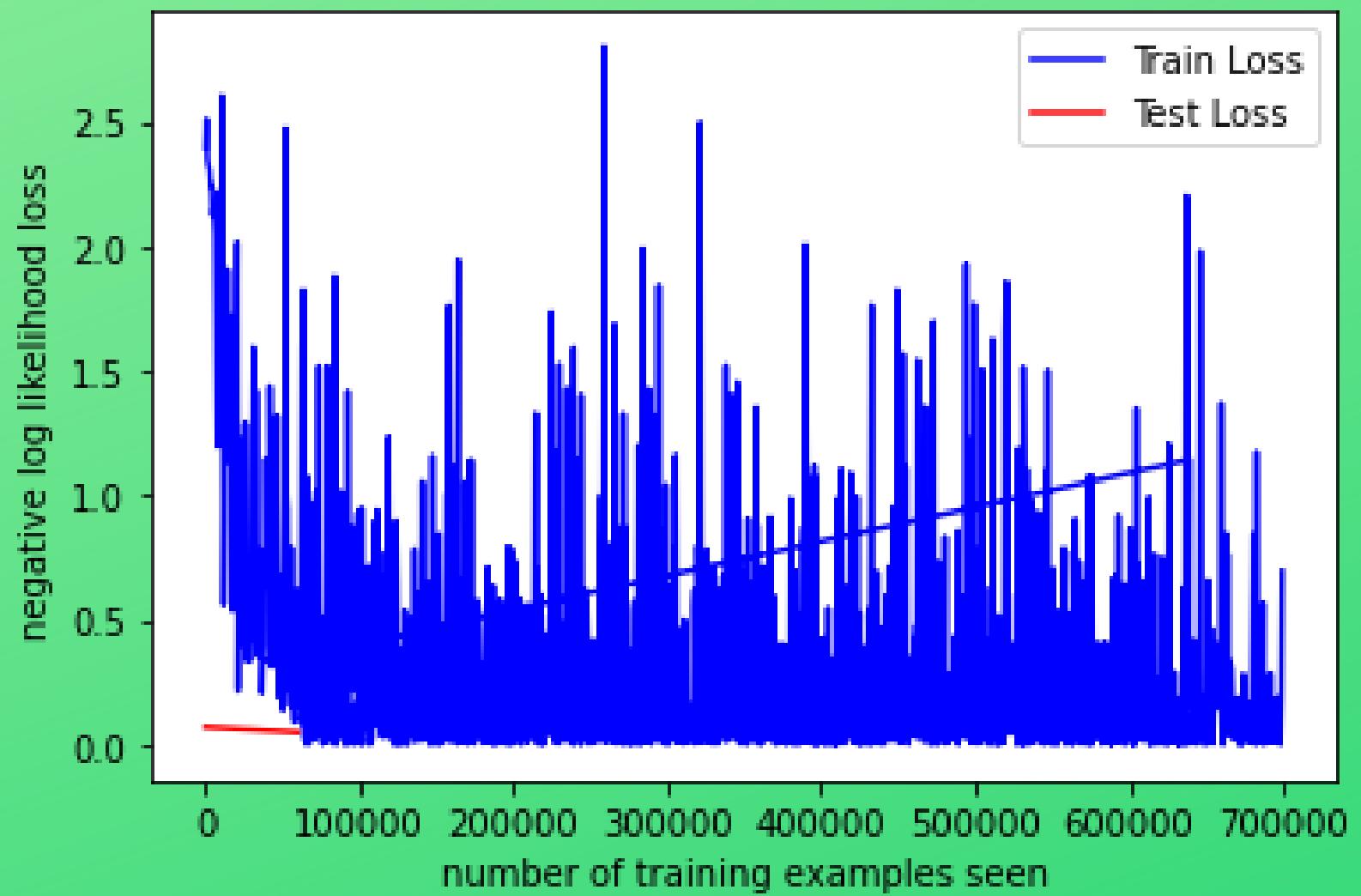
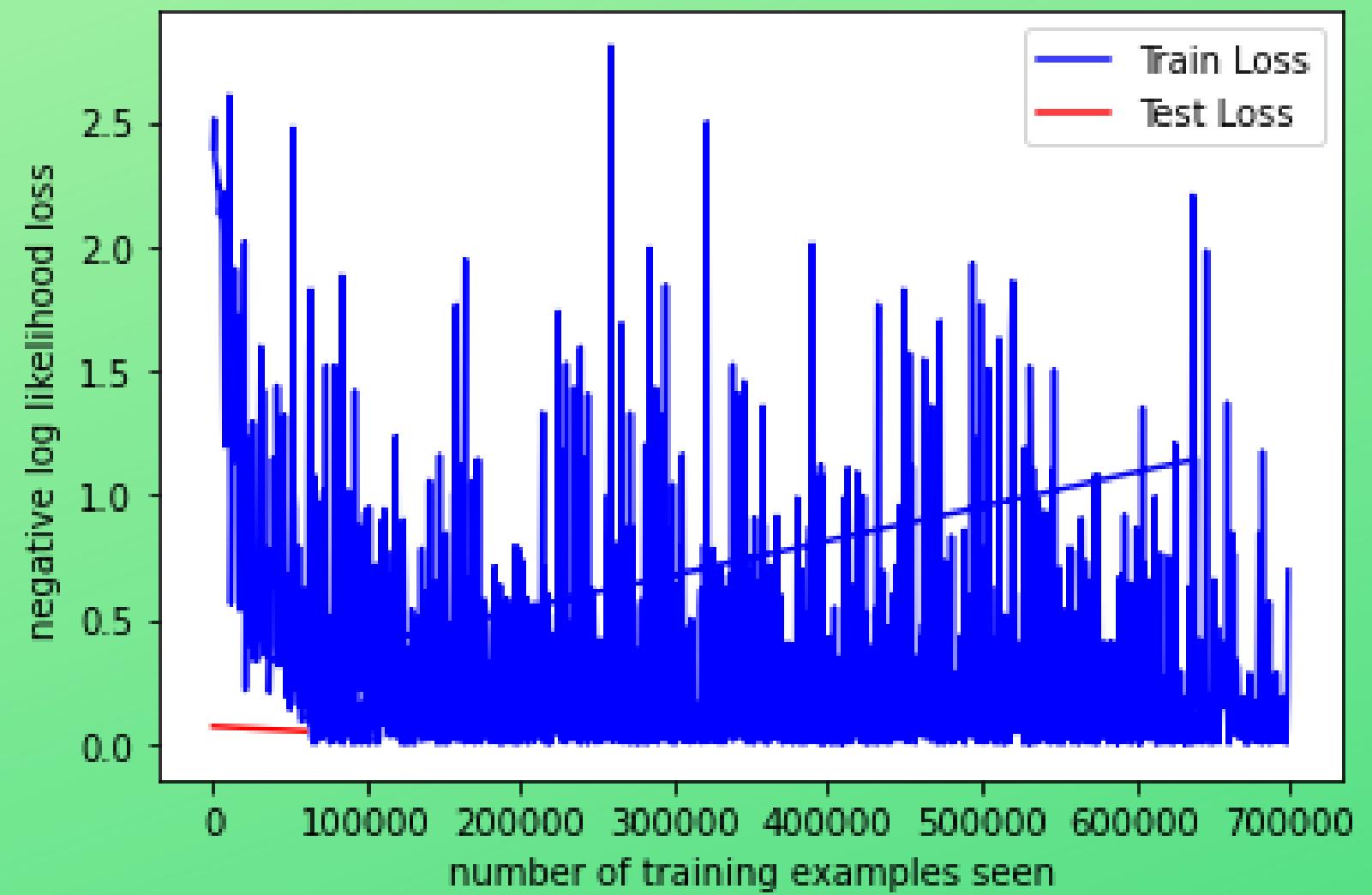
ADAM OPTIMIZER:

```
Test set: Avg. loss: 0.0527, Accuracy: 9830/10000 (98%)
```

THE BEST OPTIMIZER:

ADAM OPTIMIZER		
EPOCHS	LOSS	ACCURACY
2	0.0527	98%

EVALUATION:



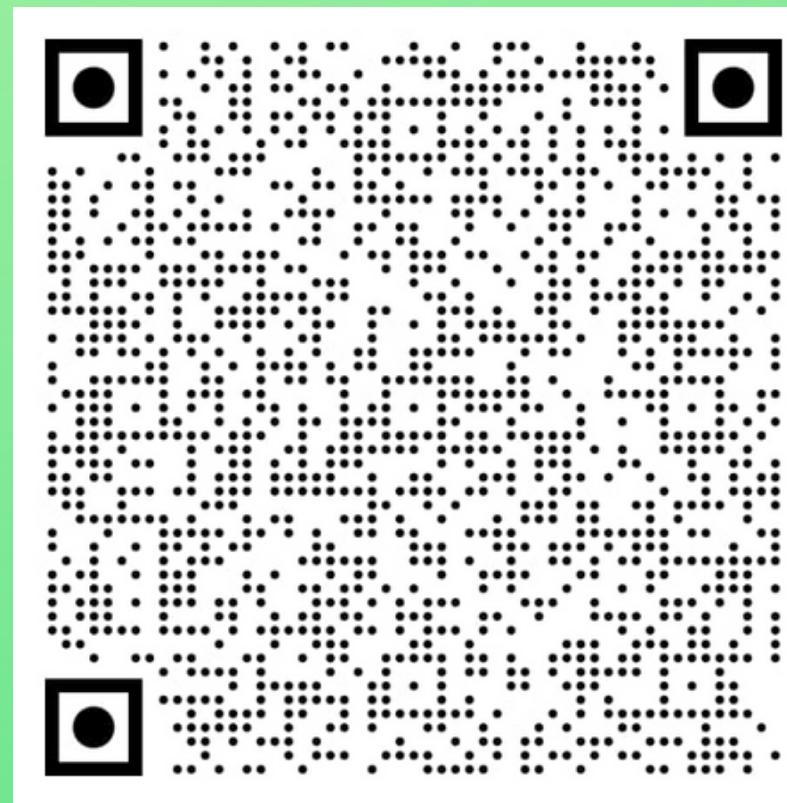
CONCLUSION:



ADAM OPTIMIZER

- After building the CNN architecture we come to a conclusion that ADAM optimizer gives us the Best Accuracy score of 98% with a loss of 0.0527

THANK YOU!



TEAM MEMBERS:-

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