

# Final Project

## Pneumonia Detection with Chest X-Ray Images

Course Code: D7047E

Course Name: Advanced Deep Learning

Presented by: Group 8



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# 1. Introduction

- General Idea
- Architectures
- Results
- Conclusion

# General Idea

## Pneumonia Detection with Chest X-Ray Images

- **Objective:** Utilize deep learning to differentiate between normal and pneumonia-afflicted chest X-ray images.
- **Importance:** Pneumonia is an inflammation of the lungs caused by various pathogens. Quick and accurate detection using X-rays can significantly aid in timely treatment.

# General Idea

Pneumonia Detection with Chest X-Ray Images

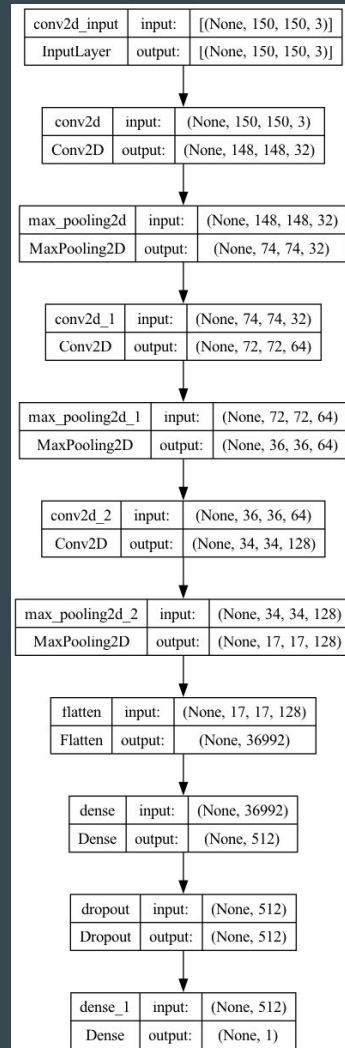
## Data Description

- **Source:** Pediatric patients from Guangzhou Women and Children's Medical Center.
- **Contents:** 5,863 X-Ray images categorized into Pneumonia and Normal.
- **Quality Control:** Images were screened for quality; diagnoses verified by two expert physicians, with a third for evaluation set checks.

# Architectures

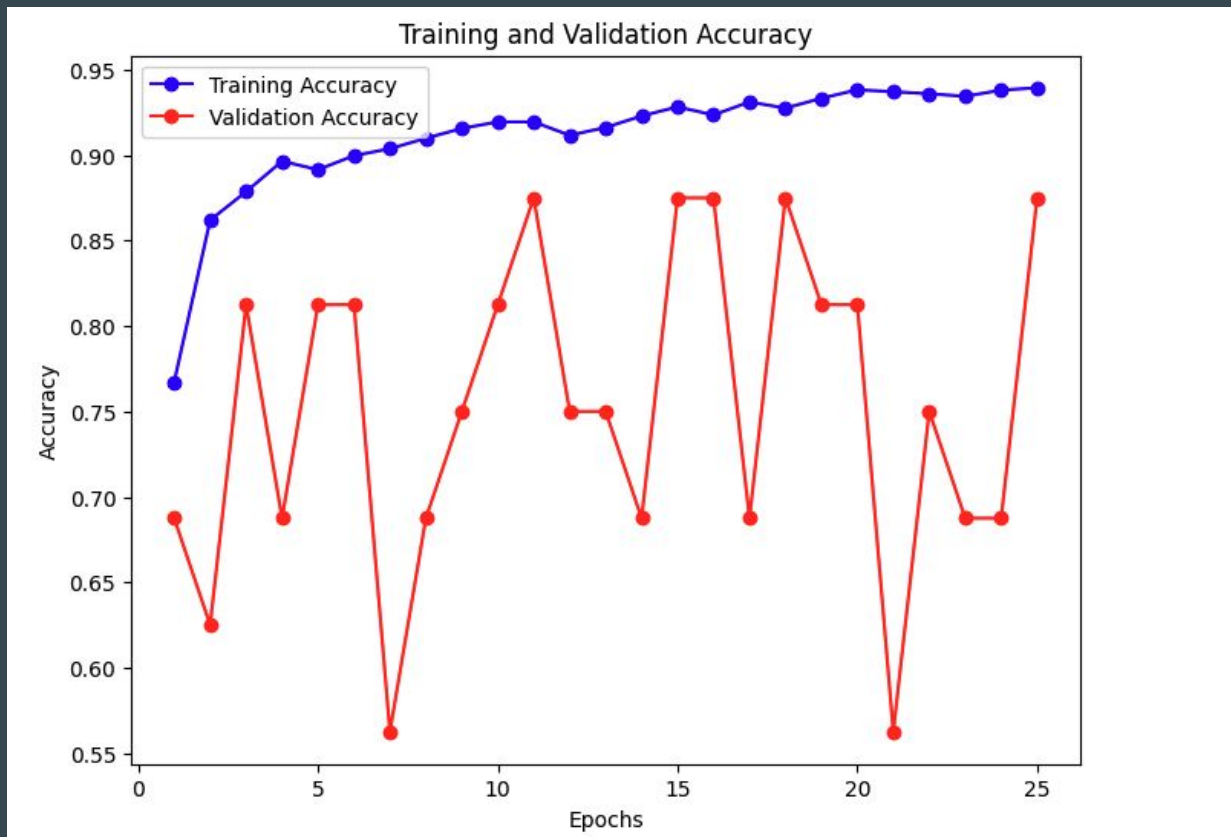
## Convolutional Neural Network with TensorFlow

- Model: Build a CNN model using Keras Sequential API
  - Convolutional Layers for features extraction
  - MaxPooling Layers for spatial reduction
  - Flatten Layer to serialize the 3D output to 1D
  - Dense Layers consists of fully connected layers for classification
  - Dropout Layer in order to prevent overfitting



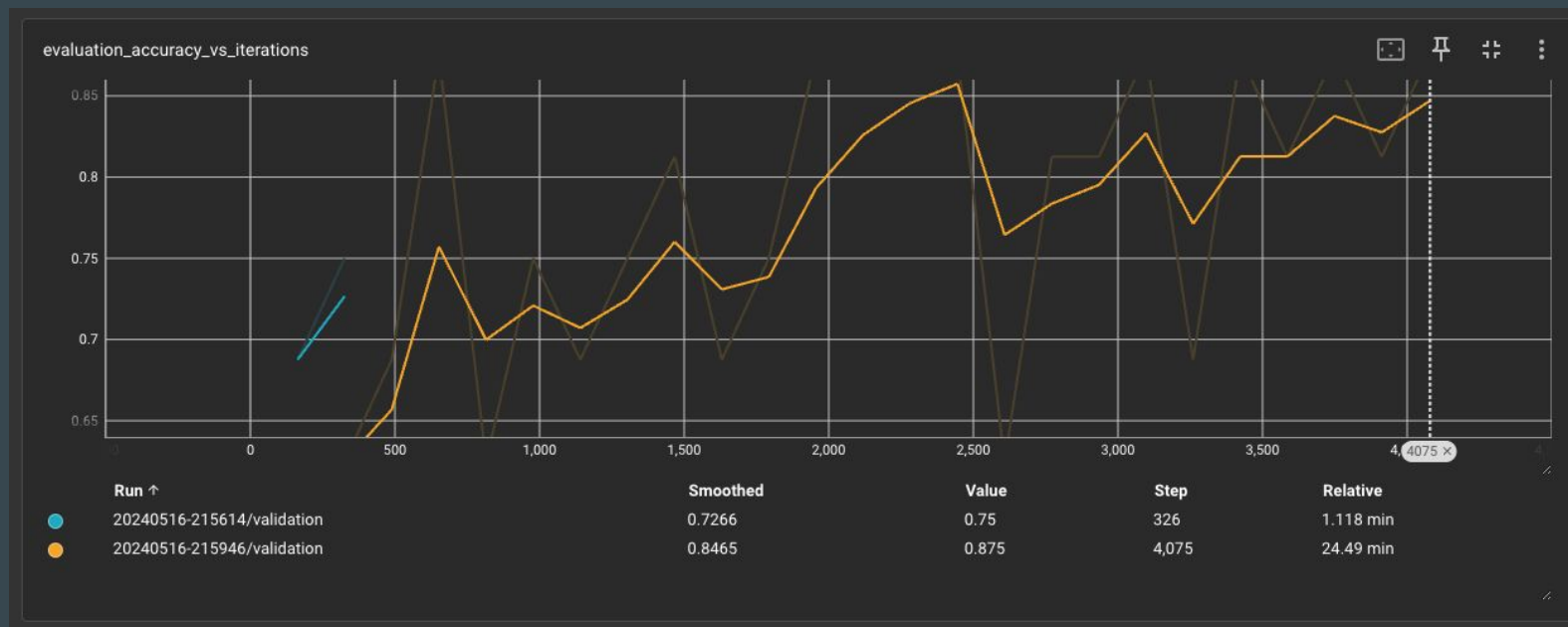
# Training

25 epochs



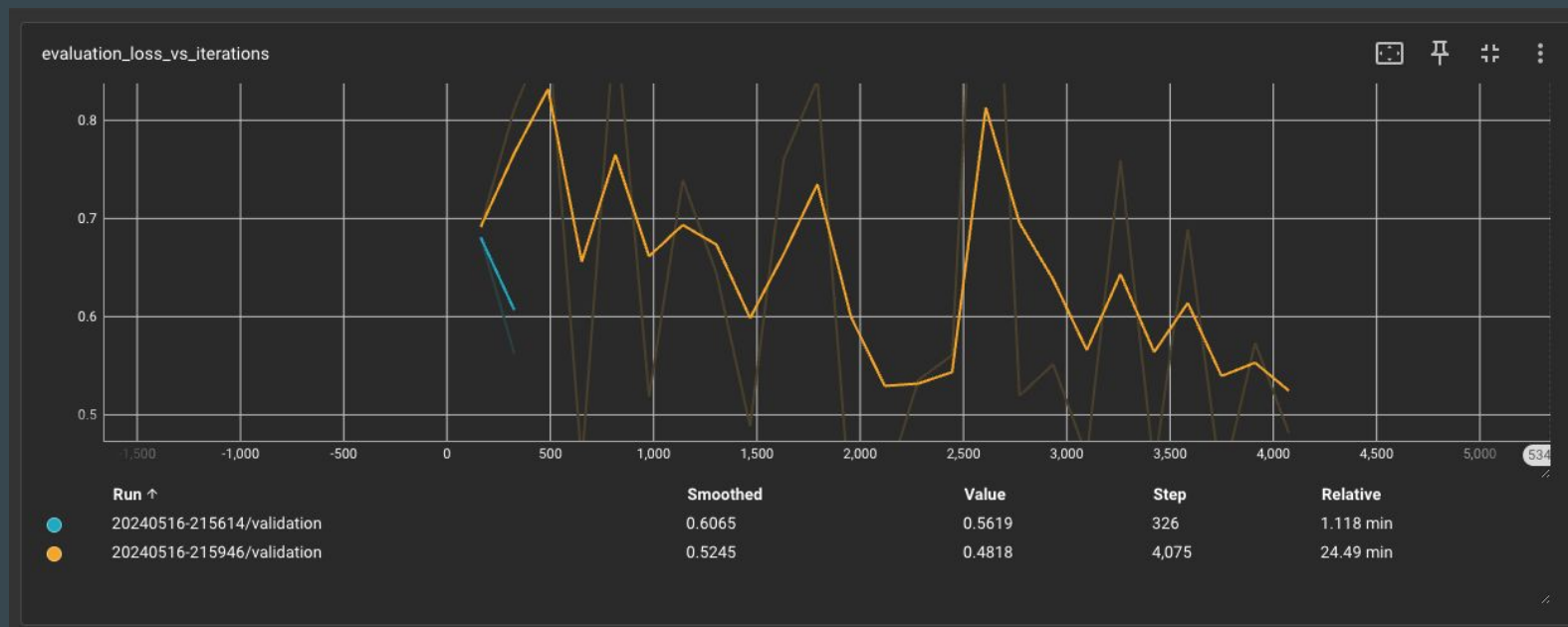
# Results

## Accuracy vs Iterations



# Results

## Loss vs Iterations





# Results

## Performance Goals

- **Metrics:**
  - Accuracy : 89.14 %
  - F1-Score : 0.9164
- **Targets:**
  - Achieve more than 85% Accuracy

# Deliverables

Git Repository at GitHub

<https://tinyurl.com/56cp9ch2>

Trained Model

<https://tinyurl.com/4h6rh8hu>

Questions?