[1]:

```python
!pip install fastai
import pandas as pd
import numpy as np
import torch
import fastai
from fastai.vision.all import *
from ipywidgets import widgets
from pathlib import Path

import os
for dirname, _, filenames in os.walk('/kaggle/input'):
    for filename in filenames:
        print(os.path.join(dirname, filename))
```

```
Requirement already satisfied: fastai in /usr/local/lib/python3.10/dist-packages (2.7.17)
Requirement already satisfied: pip in /usr/local/lib/python3.10/dist-packages (from fastai) (24.1.2)
Requirement already satisfied: packaging in /usr/local/lib/python3.10/dist-packages (from fastai) (24.1)
Requirement already satisfied: fastdownload<2,>=0.0.5 in /usr/local/lib/python3.10/dist-packages (from fastai) (0.0.7)
Requirement already satisfied: fastcore<1.8,>=1.5.29 in /usr/local/lib/python3.10/dist-packages (from fastai) (1.7.27)
Requirement already satisfied: torchvision>=0.11 in /usr/local/lib/python3.10/dist-packages (from fastai) (0.19.1+cu121)
Requirement already satisfied: matplotlib in /usr/local/lib/python3.10/dist-packages (from fastai) (3.7.1)
Requirement already satisfied: pandas in /usr/local/lib/python3.10/dist-packages (from fastai) (2.1.4)
Requirement already satisfied: requests in /usr/local/lib/python3.10/dist-packages (from fastai) (2.32.3)
Requirement already satisfied: pyyaml in /usr/local/lib/python3.10/dist-packages (from fastai) (6.0.2)
Requirement already satisfied: fastprogress>=0.2.4 in /usr/local/lib/python3.10/dist-packages (from fastai) (1.0.3)
Requirement already satisfied: pillow>=9.0.0 in /usr/local/lib/python3.10/dist-packages (from fastai) (10.4.0)
Requirement already satisfied: scikit-learn in /usr/local/lib/python3.10/dist-packages (from fastai) (1.2.2)
Requirement already satisfied: scipy in /usr/local/lib/python3.10/dist-packages (from fastai) (1.13.1)
Requirement already satisfied: spacy<4 in /usr/local/lib/python3.10/dist-packages (from fastai) (3.7.6)
Requirement already satisfied: torch<2.5,>=1.10 in /usr/local/lib/python3.10/dist-packages (from fastai) (2.4.1+cu121)
Requirement already satisfied: spacy-legacy<3.1.0,>=3.0.11 in /usr/local/lib/python3.10/dist-packages (from spacy<4->fastai) (3.0.12)
```

After importing dependencies, it is time to create a path

[2]:

```python
path=Path('/kaggle/input/pnevmoniya/train')
```

Defining a function to create a DataBlock and DataLoader

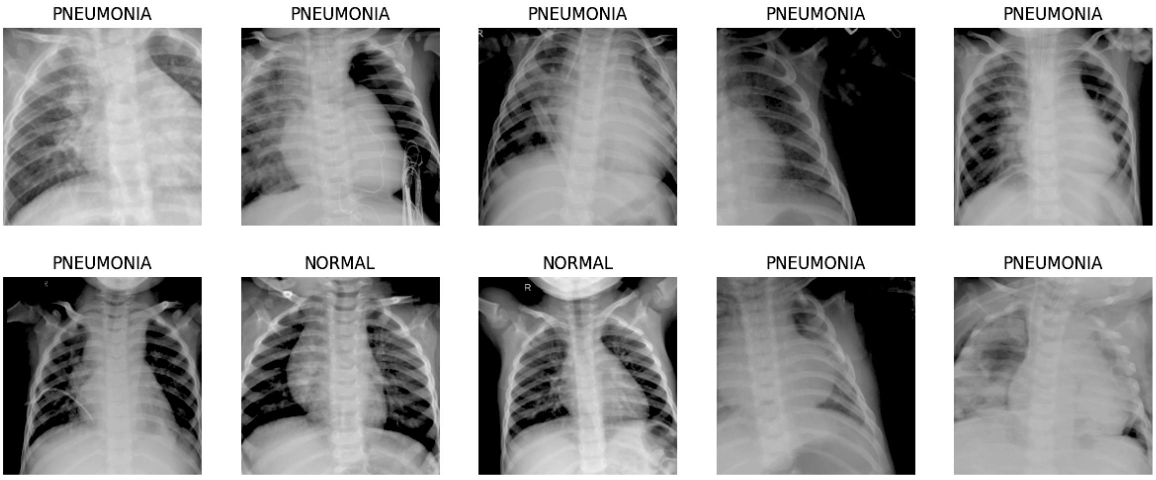
[3]:

```python
def data_loader(data):
    pneumonia=DataBlock(
        blocks=(ImageBlock, CategoryBlock),
        get_items=get_image_files,
        get_y=parent_label,
        item_tfms=Resize(224)
    )
    dls=pneumonia.dataloaders(data)
    return dls
```

We will see 10 diagnosis pictures to check the pictures

[4]:

```python
dls=data_loader(path)
dls.train.show_batch(max_n=10, nrows=2)
```



Training the model

[5]:

```python
learn=cnn_learner(dls, resnet34, metrics=accuracy)
learn.fine_tune(4)
```

```
/usr/local/lib/python3.10/dist-packages/fastai/vision/learner.py:303: UserWarning: `cnn_learner` has been renamed to `vision_learner` -- please update
your code
  warn("`cnn_learner` has been renamed to `vision_learner` -- please update your code")
Downloading: "https://download.pytorch.org/models/resnet34-b627a593.pth" to /root/.cache/torch/hub/checkpoints/resnet34-b627a593.pth
100%|██████████| 83.3M/83.3M [00:00<00:00, 178MB/s]
```

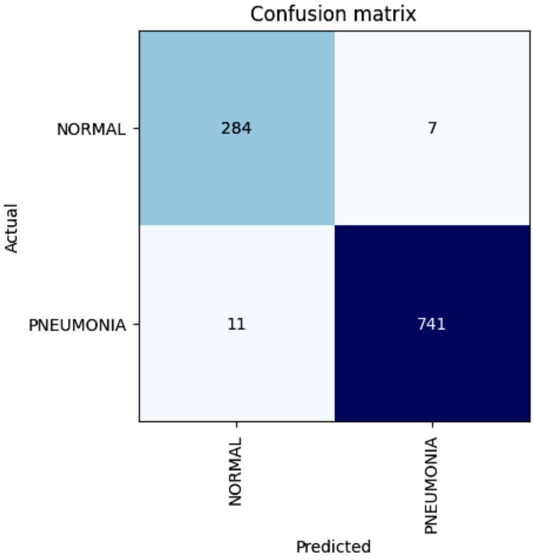
epoch	train_loss	valid_loss	accuracy	time
0	0.495862	0.178159	0.942474	01:09

epoch	train_loss	valid_loss	accuracy	time
0	0.166423	0.134428	0.971237	01:15
1	0.109182	0.105350	0.972196	01:14
2	0.059625	0.062028	0.980825	01:05
3	0.027707	0.062133	0.982742	00:59

Checking the accuracy

[7]:

```
interp = ClassificationInterpretation.from_learner(learn)
interp.plot_confusion_matrix()
```



+ Code   + Markdown

Classification Report

[8]:

```
interp.print_classification_report()
```

```
              precision    recall  f1-score   support

      NORMAL       0.96      0.98      0.97       291
   PNEUMONIA       0.99      0.99      0.99       752

    accuracy                           0.98      1043
   macro avg       0.98      0.98      0.98      1043
weighted avg       0.98      0.98      0.98      1043
```

Importing test_path and sample_solution

[24]:

```
test_path=Path('/kaggle/input/pnevmoniya/test')
sample=pd.read_csv("/kaggle/input/pnevmoniya/sample_solution.csv")
```

[24… 1

writing a for loop to predict test_set and filling the sample_solution

+ Code   + Markdown

[ ]:

```
for i in range(0,624):
    label = sample.iloc[i,0]
    img = PILImage.create(Path(f'/kaggle/input/pnevmoniya/test/{label}'))
    pred, _, prob = learn.predict(img)
    sample.iloc[i,1] = pred
```

Saving our DL Module

[ ]:

```
learn.export('pneumonia.pkl')
```