```
import torch
from diffusers import AutoPipelineForText2Image
from PIL import Image
import os

pipe = AutoPipelineForText2Image.from_pretrained(
    "stabilityai/sd-turbo",
    torch_dtype=torch.float16
)

device = "cuda" if torch.cuda.is_available() else "cpu"
pipe = pipe.to(device)

prompts = [
    "Chest X-ray, AP view, elderly female, clear lung fields, no infiltrates or opacities, normal mediastinum, clinical imaging style ",
    "Chest X-ray, PA view, adult, focal lobar consolidation in right lower lobe, bacterial pneumonia pattern, realistic diagnostic grayscale radiograph",
    "Chest X-ray, PA view, focal opacity in right middle lobe, radiodense lung lesion, grayscale diagnostic imaging",
    "Chest X-ray, PA view, blunting of costophrenic angle, pleural effusion on right side, mediastinal shift, grayscale radiography",
    "Chest X-ray, PA view, cardiomegaly with enlarged cardiac silhouette, normal lung fields, grayscale diagnostic imaging",
    "Chest X-ray, AP view, endotracheal tube and central venous catheter in position, diagnostic grayscale imaging",
    "Chest X-ray, PA view, motion artifact causing blurred ribs and diaphragm edges, clinical imaging artifact",
    "Chest X-ray, AP view, supine position, portable ICU radiograph",
    "Chest X-ray, portable AP imaging, ICU setting, low-resolution clinical radiograph, scanner domain variation",
    "Chest X-ray, PA view, cardiomegaly with enlarged cardiac silhouette, normal lung fields, grayscale diagnostic imaging"
]

output_dir = "Medical_dataset"
os.makedirs(output_dir, exist_ok=True)

for idx, prompt in enumerate(prompts):
    image = pipe(
        prompt=prompt,
        num_inference_steps=4,
        guidance_scale=0.0
    ).images[0]

    image.save(f"{output_dir}/image_{idx+1}.png")

print("Synthetic dataset generated successfully!")
```

```
Flax classes are deprecated and will be removed in Diffusers v1.0.0. We recommend migrating to PyTorch classes or pinning your version of Diffusers.
Flax classes are deprecated and will be removed in Diffusers v1.0.0. We recommend migrating to PyTorch classes or pinning your version of Diffusers.
/usr/local/lib/python3.12/dist-packages/huggingface_hub/utils/_auth.py:94: UserWarning:
The secret `HF_TOKEN` does not exist in your Colab secrets.
To authenticate with the Hugging Face Hub, create a token in your settings tab (https://huggingface.co/settings/tokens), set it as secret in your Google Colab and resta
You will be able to reuse this secret in all of your notebooks.
Please note that authentication is recommended but still optional to access public models or datasets.
  warnings.warn(
model_index.json: 100%                                                  616/616 [00:00<00:00, 67.7kB/s]

Fetching 12 files: 100%                                                 12/12 [01:51<00:00,  9.32s/it]

merges.txt:         525k/? [00:00<00:00, 6.82MB/s]

tokenizer_config.json: 100%                                             855/855 [00:00<00:00, 21.1kB/s]

special_tokens_map.json: 100%                                           574/574 [00:00<00:00, 6.74kB/s]

vocab.json:         1.06M/? [00:00<00:00, 8.55MB/s]

config.json: 100%                                                       618/618 [00:00<00:00, 8.05kB/s]

config.json:        1.87k/? [00:00<00:00, 39.0kB/s]

scheduler_config.json: 100%                                             553/553 [00:00<00:00, 13.7kB/s]

text_encoder/model.safetensors: 100%                                    1.36G/1.36G [01:51<00:00, 64.1MB/s]

unet/diffusion_pytorch_model.safetensors: 100%                          3.46G/3.46G [01:51<00:00, 114MB/s]

vae/diffusion_pytorch_model.safetensors: 100%                           335M/335M [01:09<00:00, 3.08MB/s]

config.json: 100%                                                       655/655 [00:00<00:00, 69.5kB/s]

Loading pipeline components...: 100%                                    5/5 [00:13<00:00,  4.14s/it]

`torch_dtype` is deprecated! Use `dtype` instead!
You have disabled the safety checker for <class 'diffusers.pipelines.stable_diffusion.pipeline_stable_diffusion.StableDiffusionPipeline'> by passing `safety_checker=Non
100%                                                    4/4 [00:01<00:00,  3.03it/s]

100%                                                    4/4 [00:00<00:00, 17.84it/s]

100%                                                    4/4 [00:00<00:00, 17.60it/s]

100%                                                    4/4 [00:00<00:00, 17.94it/s]
```

```
import os
from PIL import Image
import matplotlib.pyplot as plt

folder = "/content/Medical_dataset/"

for file in os.listdir(folder):
    if file.endswith(".png"):
        img = Image.open(folder + file)
        plt.figure(figsize=(4,4))
        plt.imshow(img)
        plt.axis('off')
        plt.title(file)
        plt.show()
```

image_6.png

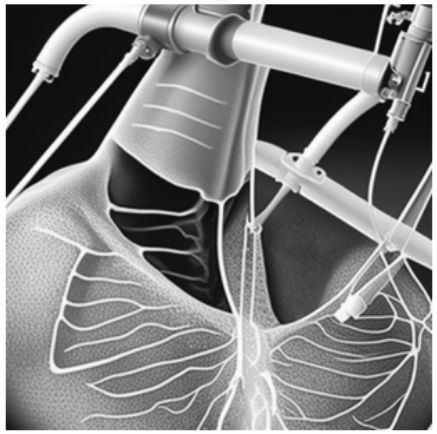


image_1.png

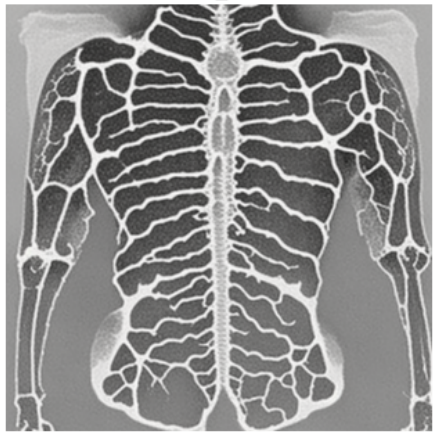


image_7.png

image_3.png

image_8.png

image_4.png

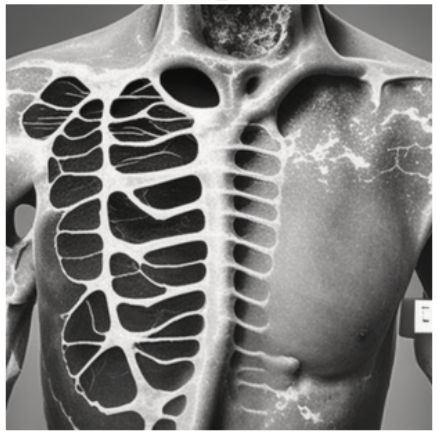


image_5.png

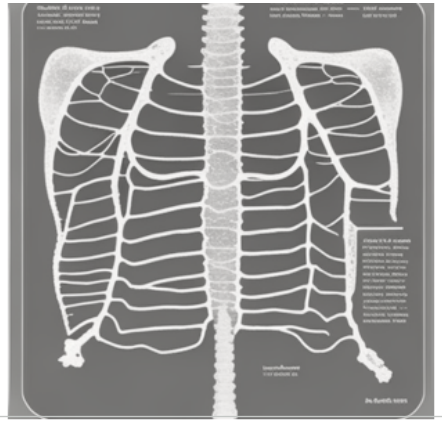


image_9.png

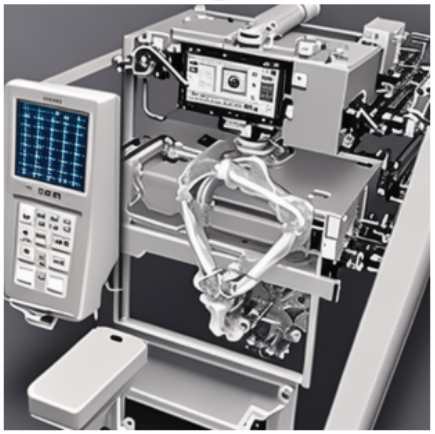
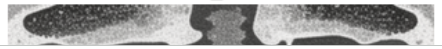


image_2.png

image_10.png



```
pip install torchxrayvision
```

```
Collecting torchxrayvision
  Downloading torchxrayvision-1.4.0-py3-none-any.whl.metadata (18 kB)
Requirement already satisfied: torch>=1 in /usr/local/lib/python3.12/dist-packages (from torchxrayvision) (2.9.0+cu126)
Requirement already satisfied: torchvision>=0.5 in /usr/local/lib/python3.12/dist-packages (from torchxrayvision) (0.24.0+cu126)
Requirement already satisfied: scikit-image>=0.16 in /usr/local/lib/python3.12/dist-packages (from torchxrayvision) (0.25.2)
Requirement already satisfied: tqdm>=4 in /usr/local/lib/python3.12/dist-packages (from torchxrayvision) (4.67.1)
Requirement already satisfied: numpy>=1 in /usr/local/lib/python3.12/dist-packages (from torchxrayvision) (2.0.2)
Requirement already satisfied: pandas>=1 in /usr/local/lib/python3.12/dist-packages (from torchxrayvision) (2.2.2)
Requirement already satisfied: requests>=1 in /usr/local/lib/python3.12/dist-packages (from torchxrayvision) (2.32.4)
Requirement already satisfied: pillow>=5.3.0 in /usr/local/lib/python3.12/dist-packages (from torchxrayvision) (11.3.0)
Requirement already satisfied: imageio in /usr/local/lib/python3.12/dist-packages (from torchxrayvision) (2.37.2)
Requirement already satisfied: python-dateutil>=2.8.2 in /usr/local/lib/python3.12/dist-packages (from pandas>=1->torchxrayvision) (2.9.0.post0)
Requirement already satisfied: pytz>=2020.1 in /usr/local/lib/python3.12/dist-packages (from pandas>=1->torchxrayvision) (2025.2)
Requirement already satisfied: tzdata>=2022.7 in /usr/local/lib/python3.12/dist-packages (from pandas>=1->torchxrayvision) (2025.3)
Requirement already satisfied: charset_normalizer<4,>=2 in /usr/local/lib/python3.12/dist-packages (from requests>=1->torchxrayvision) (3.4.4)
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.12/dist-packages (from requests>=1->torchxrayvision) (3.11)
Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/python3.12/dist-packages (from requests>=1->torchxrayvision) (2.5.0)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.12/dist-packages (from requests>=1->torchxrayvision) (2026.1.4)
Requirement already satisfied: scipy>=1.11.4 in /usr/local/lib/python3.12/dist-packages (from scikit-image>=0.16->torchxrayvision) (1.16.3)
Requirement already satisfied: networkx>=3.0 in /usr/local/lib/python3.12/dist-packages (from scikit-image>=0.16->torchxrayvision) (3.6.1)
Requirement already satisfied: tifffile>=2022.8.12 in /usr/local/lib/python3.12/dist-packages (from scikit-image>=0.16->torchxrayvision) (2026.1.14)
Requirement already satisfied: packaging>=21 in /usr/local/lib/python3.12/dist-packages (from scikit-image>=0.16->torchxrayvision) (25.0)
Requirement already satisfied: lazy-loader>=0.4 in /usr/local/lib/python3.12/dist-packages (from scikit-image>=0.16->torchxrayvision) (0.4)
Requirement already satisfied: filelock in /usr/local/lib/python3.12/dist-packages (from torch>=1->torchxrayvision) (3.20.3)
Requirement already satisfied: typing-extensions>=4.10.0 in /usr/local/lib/python3.12/dist-packages (from torch>=1->torchxrayvision) (4.15.0)
Requirement already satisfied: setuptools in /usr/local/lib/python3.12/dist-packages (from torch>=1->torchxrayvision) (75.2.0)
Requirement already satisfied: sympy>=1.13.3 in /usr/local/lib/python3.12/dist-packages (from torch>=1->torchxrayvision) (1.14.0)
Requirement already satisfied: jinja2 in /usr/local/lib/python3.12/dist-packages (from torch>=1->torchxrayvision) (3.1.6)
Requirement already satisfied: fsspec>=0.8.5 in /usr/local/lib/python3.12/dist-packages (from torch>=1->torchxrayvision) (2025.3.0)
Requirement already satisfied: nvidia-cuda-nvrtc-cu12==12.6.77 in /usr/local/lib/python3.12/dist-packages (from torch>=1->torchxrayvision) (12.6.77)
Requirement already satisfied: nvidia-cuda-runtime-cu12==12.6.77 in /usr/local/lib/python3.12/dist-packages (from torch>=1->torchxrayvision) (12.6.77)
Requirement already satisfied: nvidia-cuda-cupti-cu12==12.6.80 in /usr/local/lib/python3.12/dist-packages (from torch>=1->torchxrayvision) (12.6.80)
Requirement already satisfied: nvidia-cudnn-cu12==9.10.2.21 in /usr/local/lib/python3.12/dist-packages (from torch>=1->torchxrayvision) (9.10.2.21)
Requirement already satisfied: nvidia-cublas-cu12==12.6.4.1 in /usr/local/lib/python3.12/dist-packages (from torch>=1->torchxrayvision) (12.6.4.1)
Requirement already satisfied: nvidia-cufft-cu12==11.3.0.4 in /usr/local/lib/python3.12/dist-packages (from torch>=1->torchxrayvision) (11.3.0.4)
Requirement already satisfied: nvidia-curand-cu12==10.3.7.77 in /usr/local/lib/python3.12/dist-packages (from torch>=1->torchxrayvision) (10.3.7.77)
Requirement already satisfied: nvidia-cusolver-cu12==11.7.1.2 in /usr/local/lib/python3.12/dist-packages (from torch>=1->torchxrayvision) (11.7.1.2)
Requirement already satisfied: nvidia-cusparse-cu12==12.5.4.2 in /usr/local/lib/python3.12/dist-packages (from torch>=1->torchxrayvision) (12.5.4.2)
Requirement already satisfied: nvidia-cusparselt-cu12==0.7.1 in /usr/local/lib/python3.12/dist-packages (from torch>=1->torchxrayvision) (0.7.1)
Requirement already satisfied: nvidia-nccl-cu12==2.27.5 in /usr/local/lib/python3.12/dist-packages (from torch>=1->torchxrayvision) (2.27.5)
Requirement already satisfied: nvidia-nvshmem-cu12==3.3.20 in /usr/local/lib/python3.12/dist-packages (from torch>=1->torchxrayvision) (3.3.20)
Requirement already satisfied: nvidia-nvtx-cu12==12.6.77 in /usr/local/lib/python3.12/dist-packages (from torch>=1->torchxrayvision) (12.6.77)
Requirement already satisfied: nvidia-nvjitlink-cu12==12.6.85 in /usr/local/lib/python3.12/dist-packages (from torch>=1->torchxrayvision) (12.6.85)
Requirement already satisfied: nvidia-cufile-cu12==1.11.1.6 in /usr/local/lib/python3.12/dist-packages (from torch>=1->torchxrayvision) (1.11.1.6)
Requirement already satisfied: triton==3.5.0 in /usr/local/lib/python3.12/dist-packages (from torch>=1->torchxrayvision) (3.5.0)
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.12/dist-packages (from python-dateutil>=2.8.2->pandas>=1->torchxrayvision) (1.17.0)
Requirement already satisfied: mpmath<1.4,>=1.1.0 in /usr/local/lib/python3.12/dist-packages (from sympy>=1.13.3->torch>=1->torchxrayvision) (1.3.0)
Requirement already satisfied: MarkupSafe>=2.0 in /usr/local/lib/python3.12/dist-packages (from jinja2->torch>=1->torchxrayvision) (3.0.3)
Downloading torchxrayvision-1.4.0-py3-none-any.whl (29.0 MB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 29.0/29.0 MB 22.0 MB/s eta 0:00:00
Installing collected packages: torchxrayvision
Successfully installed torchxrayvision-1.4.0
```

Testing the dataset on pretrained DenseNet Model

```
import torch
import torchvision.transforms as transforms
import torchxrayvision as xrv
from PIL import Image
import os
from sklearn.metrics import accuracy_score, classification_report

model = xrv.models.DenseNet(weights="all")
model.eval()

transform = transforms.Compose([
    transforms.Resize((224,224)),
    transforms.ToTensor()
])

data_path = "/content/Medical_dataset"

y_true = [
    "Normal",
    "Pneumonia",
    "Mass",
    "Effusion",
    "Cardiomegaly",
    "Normal",
    "Normal",
    "Normal",
    "Normal",
    "Cardiomegaly"
]

pathologies = model.pathologies
y_pred = []

for file in sorted(os.listdir(data_path)):
    img = Image.open(os.path.join(data_path, file)).convert("L")
    img = transform(img).unsqueeze(0)

    with torch.no_grad():
        output = model(img)[0]

    idx = output.argmax().item()
    predicted_label = pathologies[idx]
    y_pred.append(predicted_label)


mapping = {
    "Cardiomegaly": "Cardiomegaly",
    "Pneumonia": "Pneumonia",
    "Mass": "Mass",
    "Effusion": "Effusion",
}

y_pred_final = [mapping.get(lbl, "Normal") for lbl in y_pred]

acc = accuracy_score(y_true, y_pred_final)
print("Accuracy:", acc)
```

```
print(classification_report(y_true, y_pred_final))
```

```
Accuracy: 0.1
              precision    recall  f1-score   support

Cardiomegaly       0.00      0.00      0.00         2
    Effusion       0.10      1.00      0.18         1
        Mass       0.00      0.00      0.00         1
      Normal       0.00      0.00      0.00         5
   Pneumonia       0.00      0.00      0.00         1

    accuracy                           0.10        10
   macro avg       0.02      0.20      0.04        10
weighted avg       0.01      0.10      0.02        10
```

```
print("Accuracy of the dataset that created through hugging face on a pretrained Model: ",acc)
```

```
Accuracy of the dataset that created through hugging face on a pretrained Model:  0.1
```

Testing the Real Dataset on the Pretrained model DenseNet

```
!mkdir ~/.kaggle
!cp kaggle.json ~/.kaggle/
!chmod 600 ~/.kaggle/kaggle.json
!pip install kaggle
```

```
Requirement already satisfied: kaggle in /usr/local/lib/python3.12/dist-packages (1.7.4.5)
Requirement already satisfied: bleach in /usr/local/lib/python3.12/dist-packages (from kaggle) (6.3.0)
Requirement already satisfied: certifi>=14.05.14 in /usr/local/lib/python3.12/dist-packages (from kaggle) (2026.1.4)
Requirement already satisfied: charset-normalizer in /usr/local/lib/python3.12/dist-packages (from kaggle) (3.4.4)
Requirement already satisfied: idna in /usr/local/lib/python3.12/dist-packages (from kaggle) (3.11)
Requirement already satisfied: protobuf in /usr/local/lib/python3.12/dist-packages (from kaggle) (5.29.5)
Requirement already satisfied: python-dateutil>=2.5.3 in /usr/local/lib/python3.12/dist-packages (from kaggle) (2.9.0.post0)
Requirement already satisfied: python-slugify in /usr/local/lib/python3.12/dist-packages (from kaggle) (8.0.4)
Requirement already satisfied: requests in /usr/local/lib/python3.12/dist-packages (from kaggle) (2.32.4)
Requirement already satisfied: setuptools>=21.0.0 in /usr/local/lib/python3.12/dist-packages (from kaggle) (75.2.0)
Requirement already satisfied: six>=1.10 in /usr/local/lib/python3.12/dist-packages (from kaggle) (1.17.0)
Requirement already satisfied: text-unidecode in /usr/local/lib/python3.12/dist-packages (from kaggle) (1.3)
Requirement already satisfied: tqdm in /usr/local/lib/python3.12/dist-packages (from kaggle) (4.67.1)
Requirement already satisfied: urllib3>=1.15.1 in /usr/local/lib/python3.12/dist-packages (from kaggle) (2.5.0)
Requirement already satisfied: webencodings in /usr/local/lib/python3.12/dist-packages (from kaggle) (0.5.1)
```

```
!kaggle datasets download -d paultimothymooney/chest-xray-pneumonia -p ./data
```

```
Dataset URL: https://www.kaggle.com/datasets/paultimothymooney/chest-xray-pneumonia
License(s): other
Downloading chest-xray-pneumonia.zip to ./data
100% 2.29G/2.29G [00:21<00:00, 35.2MB/s]
100% 2.29G/2.29G [00:21<00:00, 112MB/s]
```

```
!unzip ./data/chest-xray-pneumonia.zip -d ./data/
```

```
  inflating: ./data/chest_xray/train/PNEUMONIA/person1107_virus_1832.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1108_bacteria_3049.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1108_virus_1833.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1109_bacteria_3050.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person110_virus_205.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person110_virus_206.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person110_virus_207.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person110_virus_208.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1110_bacteria_3051.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1110_virus_1835.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1111_bacteria_3052.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1111_virus_1836.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1112_bacteria_3053.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1112_virus_1837.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1113_virus_1838.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1114_bacteria_3055.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1115_bacteria_3056.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1115_virus_1840.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1116_virus_1841.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1118_bacteria_3059.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1119_virus_1844.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person111_virus_209.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person111_virus_210.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person111_virus_212.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1120_virus_1845.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1121_virus_1846.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1122_bacteria_3063.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1122_virus_1847.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1123_virus_1848.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1124_bacteria_3065.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1124_virus_1851.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1125_bacteria_3066.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1125_virus_1852.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1126_virus_1853.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1127_bacteria_3068.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1127_virus_1854.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1128_bacteria_3069.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1129_bacteria_3070.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1129_virus_1857.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person112_virus_213.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1130_bacteria_3072.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1130_virus_1860.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1131_bacteria_3073.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1132_virus_1863.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1133_bacteria_3075.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1133_virus_1865.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1134_bacteria_3076.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1135_bacteria_3077.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1136_bacteria_3078.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1137_virus_1876.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1138_bacteria_3080.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1138_virus_1877.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1138_virus_1879.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1139_bacteria_3081.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1139_bacteria_3082.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1139_virus_1882.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person113_virus_215.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person113_virus_216.jpeg
  inflating: ./data/chest_xray/train/PNEUMONIA/person1140_bacteria_3083.jpeg
```

```
import torch
import torchvision.transforms as transforms
import torchvision.datasets as datasets
from sklearn.metrics import accuracy_score
import torchxrayvision as xrv

model = xrv.models.DenseNet(weights="all")
model.eval()

transform = transforms.Compose([
    transforms.Grayscale(),
    transforms.Resize((224,224)),
    transforms.ToTensor()
])

test_path = "./data/chest_xray/test/"
test_data = datasets.ImageFolder(test_path, transform=transform)
test_loader = torch.utils.data.DataLoader(test_data, batch_size=16, shuffle=False)

idx_to_label = {v:k for k,v in test_data.class_to_idx.items()}

pathologies = model.pathologies

y_true = []
y_pred = []

for imgs, labels in test_loader:
    with torch.no_grad():
        outputs = model(imgs)

    preds = outputs.argmax(1)

    for p in preds:
        predicted_pathology = pathologies[p]

        if predicted_pathology in ["Pneumonia", "Infiltration"]:
            y_pred.append("PNEUMONIA")
        else:
            y_pred.append("NORMAL")

    for l in labels:
        y_true.append(idx_to_label[int(l)].upper())
```

```
acc = accuracy_score(y_true, y_pred)
print("Test Accuracy:", acc*100)
```

```
Test Accuracy: 37.5
```

```
!kaggle datasets download -d paultimothymooney/chest-xray-pneumonia -p ./data
!unzip ./data/chest-xray-pneumonia.zip -d ./data/
```

```
inflating: ./data/chest_xray/train/NORMAL/IM-0522-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0523-0001-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0523-0001-0002.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0523-0001-0003.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0523-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0524-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0525-0001-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0525-0001-0002.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0525-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0526-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0527-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0528-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0529-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0530-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0531-0001-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0531-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0532-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0533-0001-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0533-0001-0002.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0533-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0534-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0535-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0536-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0537-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0538-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0539-0001-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0539-0001-0002.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0539-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0540-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0541-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0542-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0543-0001-0002.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0543-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0544-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0545-0001-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0545-0001-0002.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0545-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0546-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0547-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0548-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0549-0001-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0549-0001-0002.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0549-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0551-0001-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0551-0001-0002.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0551-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0552-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0553-0001-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0553-0001-0002.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0553-0001-0003.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0553-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0554-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0555-0001-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0555-0001-0002.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0555-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0556-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0557-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0559-0001.jpeg
inflating: ./data/chest_xray/train/NORMAL/IM-0560-0001.jpeg
```

```
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import torchvision.transforms as transforms
import torchvision.datasets as datasets
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import torchxrayvision as xrv

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model.eval()

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test_loader = torch.utils.data.DataLoader(test_data, batch_size=16, shuffle=False)

idx_to_label = {v:k for k,v in test_data.class_to_idx.items()}
pathologies = model.pathologies

y_true, y_pred = [], []

for imgs, labels in test_loader:
    with torch.no_grad():
        outputs = model(imgs)
```