

```

# =====
# STEP 1: Install required libraries
# =====
!pip install diffusers transformers accelerate safetensors pillow matplotlib

# =====
# STEP 2: Imports
# =====
from diffusers import AutoPipelineForText2Image
import torch
import os
import matplotlib.pyplot as plt

# =====
# STEP 3: Load lightweight Stable Diffusion (CPU safe)
# =====
pipe = AutoPipelineForText2Image.from_pretrained(
    "stabilityai/sd-turbo",
    torch_dtype=torch.float32
)

pipe = pipe.to("cpu")
pipe.enable_attention_slicing()

# =====
# STEP 4: Create dataset directory
# =====
dataset_dir = "xray_dataset"
os.makedirs(dataset_dir, exist_ok=True)

# =====
# STEP 5: Disease labels (LIST)
# =====
labels = [
    "lung_cancer",
    "fracture",
    "pneumonia",
    "tuberculosis",
    "normal"
]

# Corresponding X-ray prompts
prompts = {
    "lung_cancer": "realistic chest x-ray showing lung cancer tumor, grayscale medical x-ray",
    "fracture": "x-ray image of fractured human bone, broken arm, orthopedic radiograph",
    "pneumonia": "chest x-ray showing pneumonia infection, cloudy lungs, radiology scan",
    "tuberculosis": "chest x-ray showing tuberculosis, lung lesions, medical radiograph",
    "normal": "normal healthy chest x-ray, clear lungs, medical radiograph"
}

# =====
# STEP 6: Generate X-ray images
# =====
IMAGES_PER_LABEL = 3 # can change to 5 if needed

for label in labels:
    label_path = os.path.join(dataset_dir, label)
    os.makedirs(label_path, exist_ok=True)

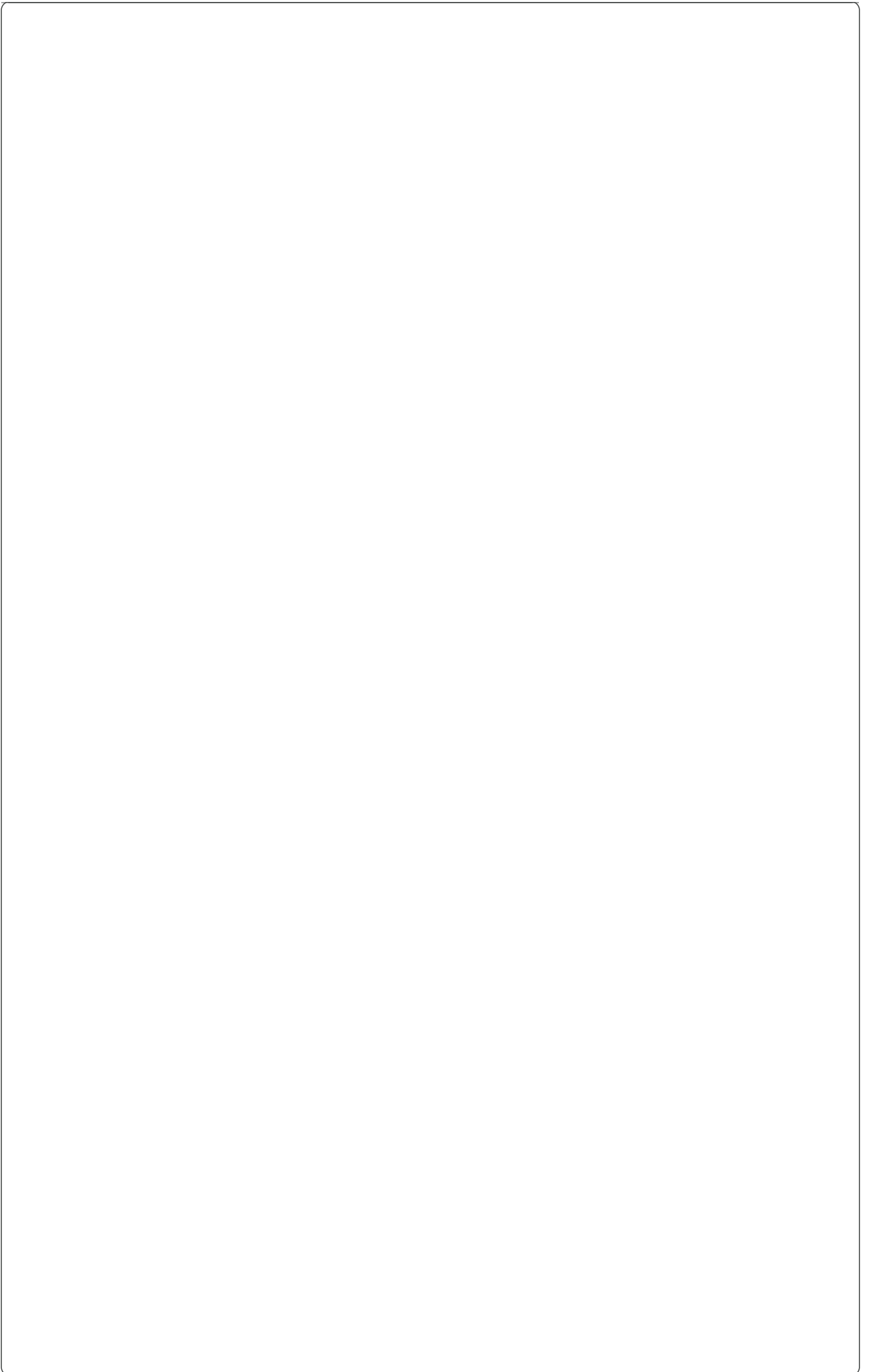
    for i in range(1, IMAGES_PER_LABEL + 1):
        image = pipe(
            prompts[label],
            num_inference_steps=2,
            guidance_scale=0.0
        ).images[0]

        image_file = f"{label}_{i}.png"
        image.save(os.path.join(label_path, image_file))

```

```
# Display image
plt.imshow(image, cmap="gray")
plt.axis("off")
plt.title(f"{label} - Image {i}")
plt.show()

print("✅ X-RAY DATASET GENERATED SUCCESSFULLY")
```



```

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```

Loading pipeline components...: 100%

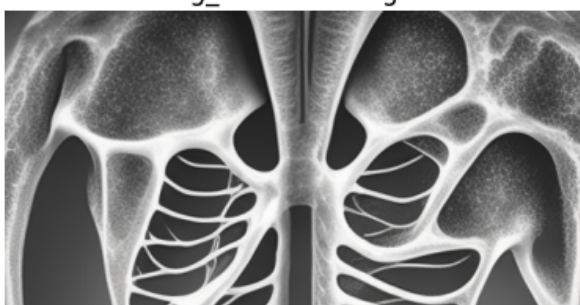
5/5 [00:00<00:00, 13.02it/s]

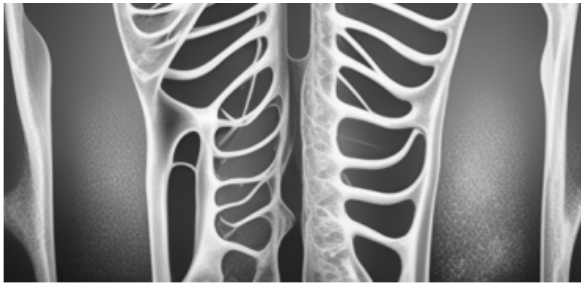
You have disabled the safety checker for <class 'diffusers.pipelines.stable_diffusion.pipeline_stable_diffusion'>

100%

2/2 [00:23<00:00, 11.79s/it]

lung_cancer - Image 1





100%

2/2 [00:23<00:00, 11.68s/it]

lung_cancer - Image 2



100%

2/2 [00:21<00:00, 10.88s/it]

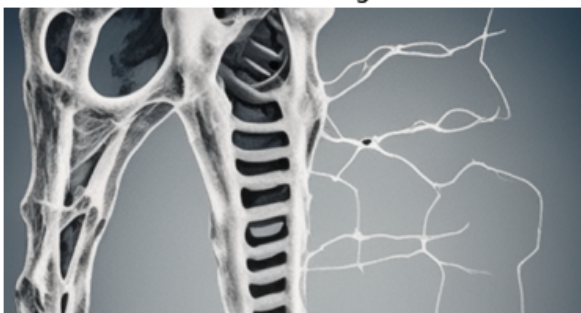
lung_cancer - Image 3

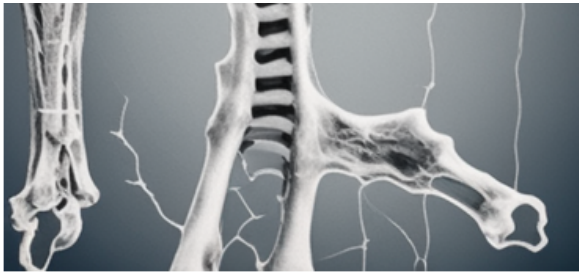


100%

2/2 [00:21<00:00, 10.81s/it]

fracture - Image 1





100%

2/2 [00:25<00:00, 13.27s/it]

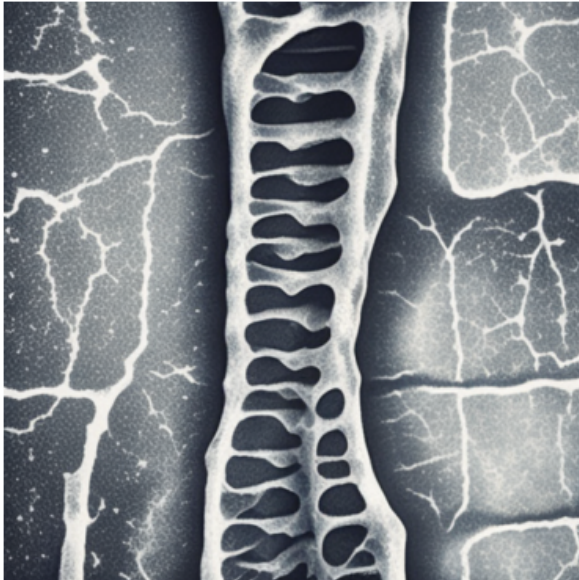
fracture - Image 2



100%

2/2 [00:21<00:00, 10.89s/it]

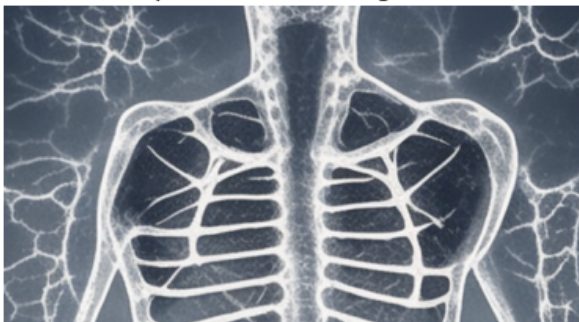
fracture - Image 3

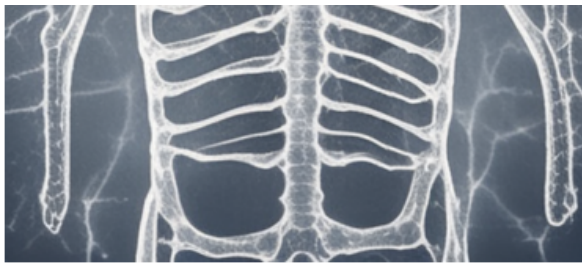


100%

2/2 [00:22<00:00, 11.39s/it]

pneumonia - Image 1





100%

2/2 [00:21<00:00, 10.85s/it]

pneumonia - Image 2



100%

2/2 [00:21<00:00, 10.90s/it]

pneumonia - Image 3



100%

2/2 [00:21<00:00, 10.93s/it]

tuberculosis - Image 1



```
import shutil

shutil.make_archive("xray_dataset", "zip", "xray_dataset")
```

```
!context/xray_dataset.zip
```

100%

2/2 [00:22<00:00, 11.00s/it]

tuberculosis - Image 2

