

Loading Packages

```
In [1]: import os
import torch
from utils.visualize import visualize_images_from_classes
from utils.datasets import returnDataLoader
from utils.model_execution import runFMA, runDLA
from utils.analysis import print_analysis

/home/sysop/programming/python/work/HistoART/.venv/lib/python3.12/site-packages/tqdm/auto.py:21: TqdmWarning: IPProgress not found. Please update jupyter and ipywidget
s. See https://ipywidgets.readthedocs.io/en/stable/user_install.html
from .autonotebook import tqdm as notebook_tqdm
```

```
In [5]: if torch.cuda.is_available():
device = torch.device("cuda")
elif torch.xpu.is_available():
device = torch.device("xpu")
elif torch.mps.is_available():
device = torch.device("mps")
else:
device = torch.device("cpu")

print(f"Using device: {device}")

Using device: xpu
```

Load Patches

```
In [6]: while True:
data_dir = input("Please enter the dataset directory, for example: ./data/: ") or "./data/D40x/test/"

if not os.path.isdir(data_dir):
print(f"Directory '{data_dir}' does not exist. Please try again.\n")
continue
print("\nDataset directory confirmed.\n")

break

classes = []
artifact_free = input("Please enter the name of the artifact free folder (e.g., artifact_free): ").strip()
artifact_free_path = os.path.join(data_dir, artifact_free)

if artifact_free and os.path.isdir(artifact_free_path):
classes.append(artifact_free)
print(f"Folder '{artifact_free_path}' exists and was added as artifact free.")
else:
if artifact_free:
print(f"Folder '{artifact_free_path}' does not exist. Please check the name.")

artifact = input("Please enter the name of the artifact folder (e.g., artifact): ").strip()
artifact_path = os.path.join(data_dir, artifact)

if artifact and os.path.isdir(artifact_path):
classes.append(artifact)
print(f"Folder '{artifact_path}' exists and was added as artifact.")
else:
if artifact:
print(f"Folder '{artifact_path}' does not exist. Please check the name.")

if classes:
print("\nDataset loaded successfully.")
else:
print("\nNo valid class folders were provided. Defaulting to sample classes.")
classes = ['artifact_free', 'blur']

Dataset directory confirmed.

No valid class folders were provided. Defaulting to sample classes.
```

Random visualization of different classes

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In [ ]: visualize_images_from_classes(data_dir, classes)
```

artifact_free

Prepare data for classification

```
In [ ]: dataloader = returnDataLoader(data_dir, classes)
print("Total dataset size (samples): ", len(dataloader.dataset))
```

Classify images with different models

FMA

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In [ ]: runFMA(dataloader, device, './models/fma_binary.pth')
```

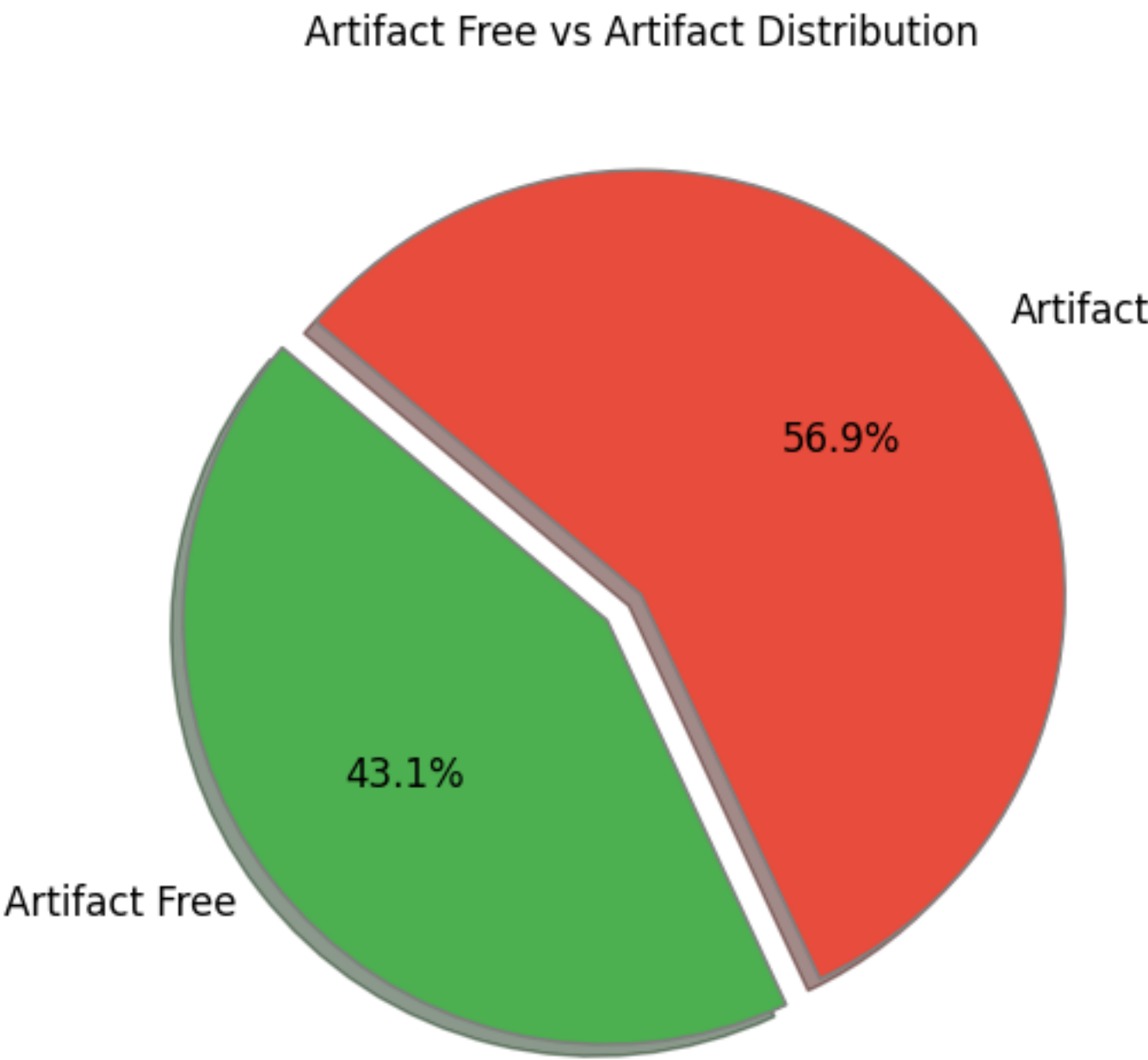
DLA

```
In [ ]: runDLA(dataloader, device, './models/dla_binary.pth')
```

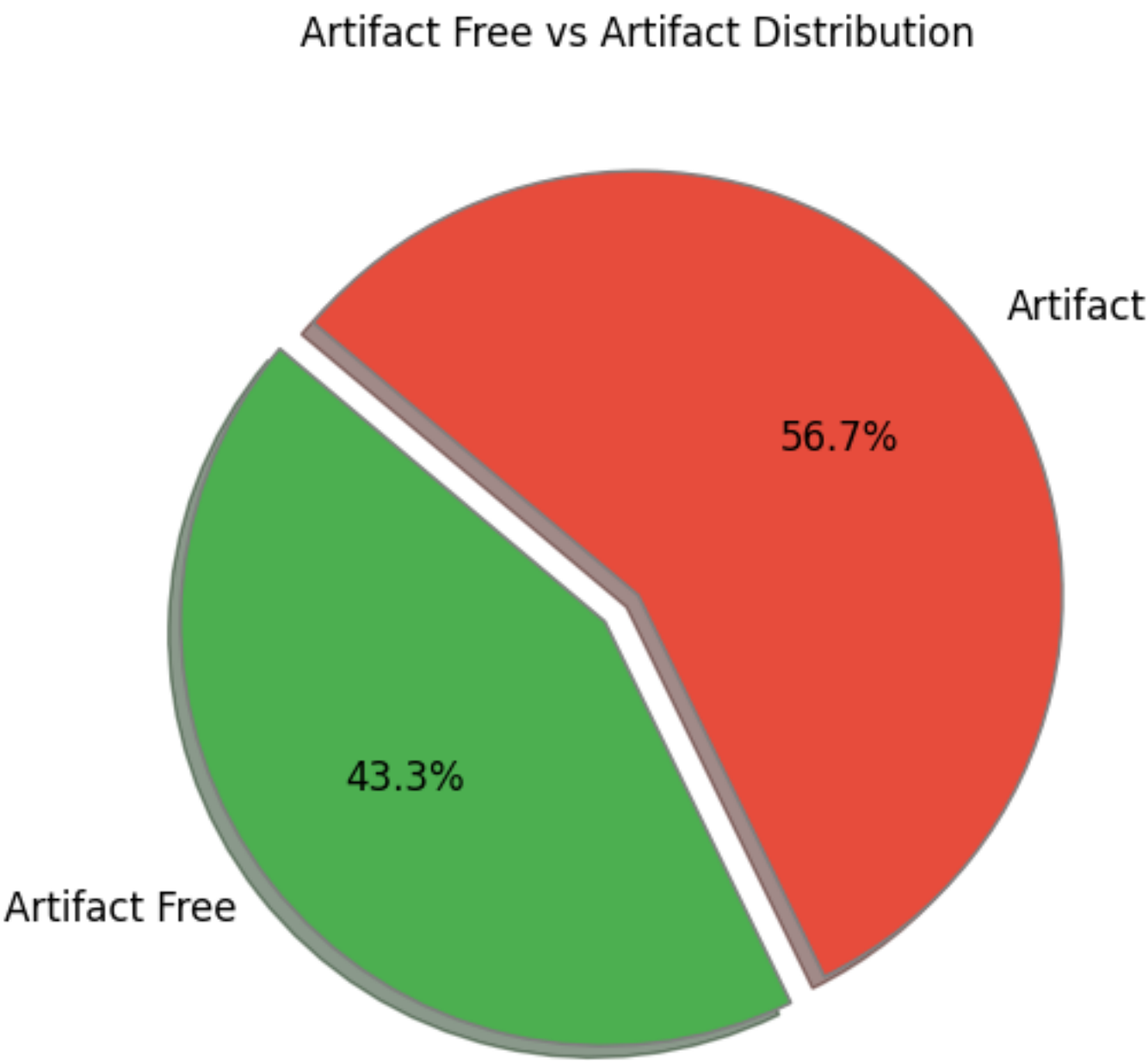
KBA

Analysis

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In [3]: print_analysis('./results/fma_results.csv')
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In [4]: print_analysis('./results/dla_results.csv')
```



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In [ ]:
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