LSMA : Project Tracking - Week 2

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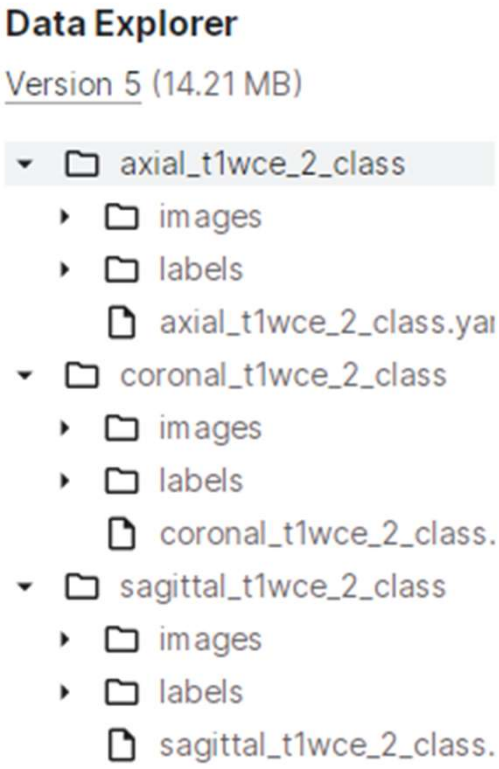
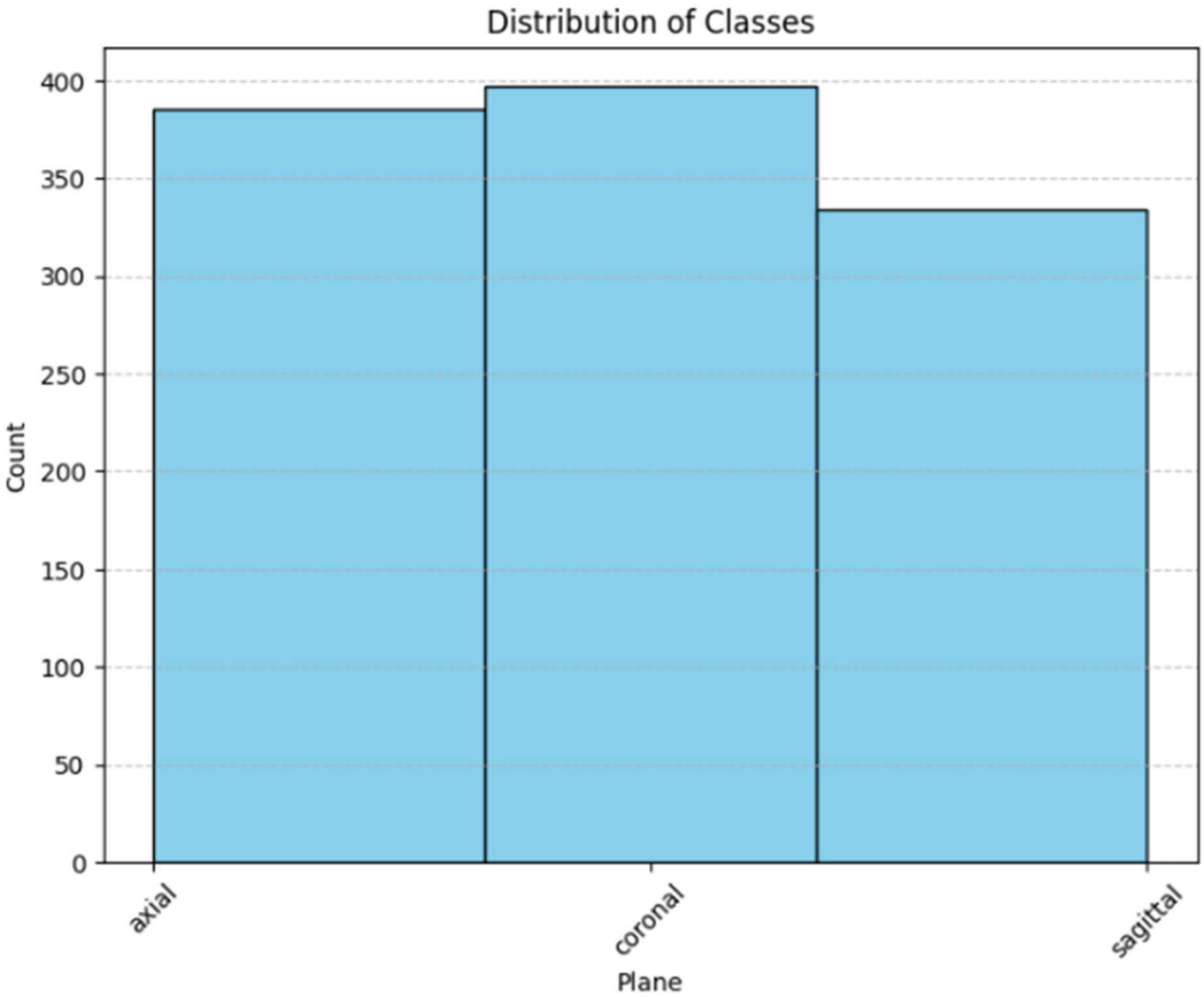
MRI type separation

Step1: Resizing the images using the cv2.resize() function from the OpenCV library.

Step2: Finding a dataset with labeled images:



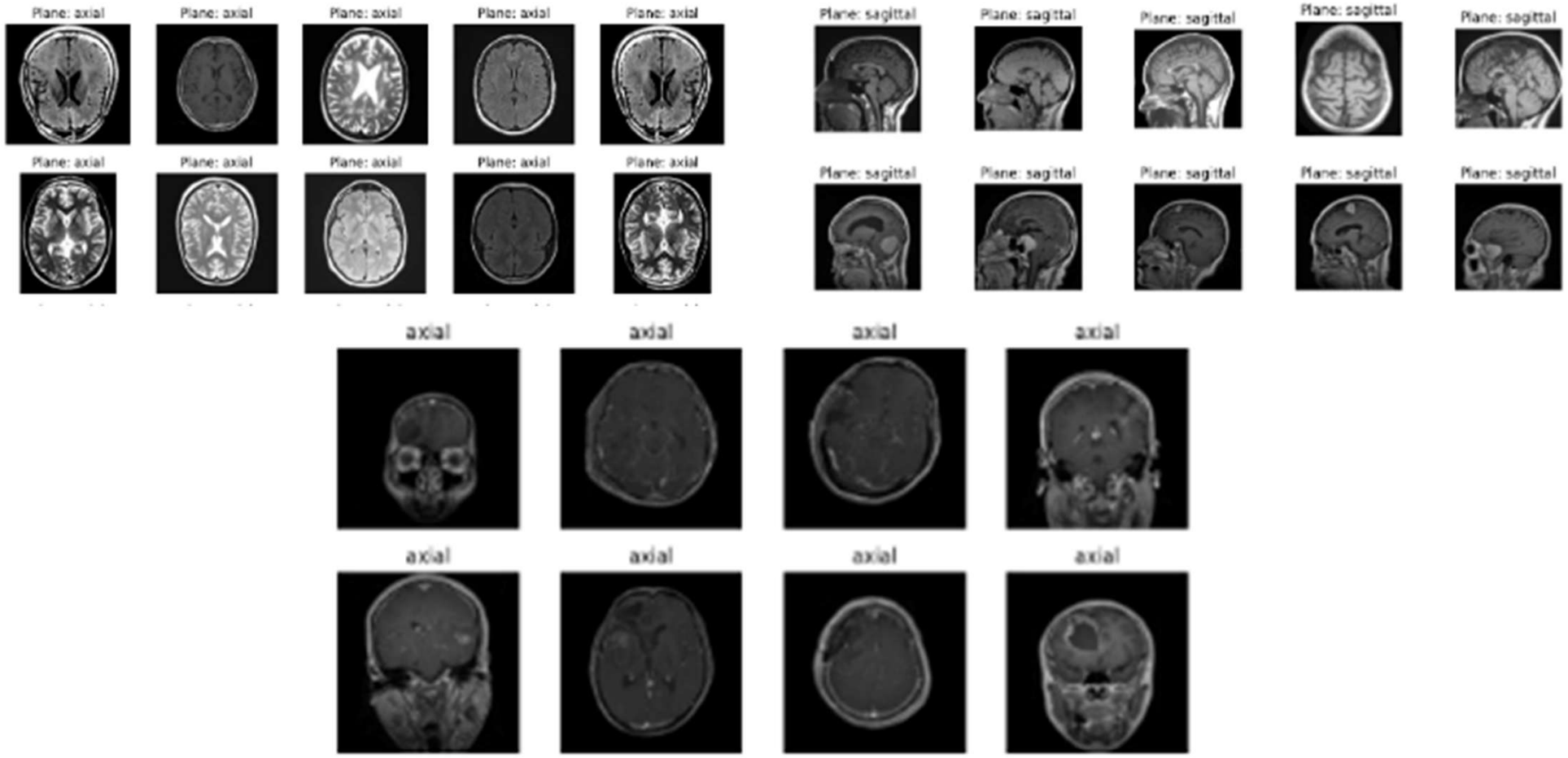

Distribution of Classes
Count
400
350
300
250
200
150
100
50
0
axial
coronal
sagittal
Plane

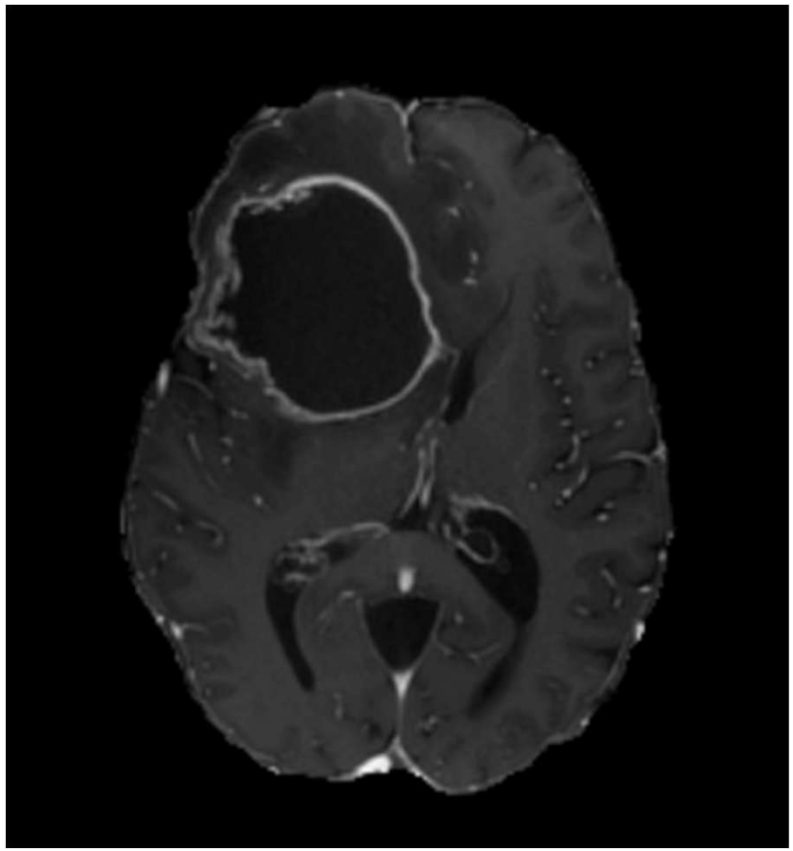
Step3: Training a SVM model for classifying the planes:

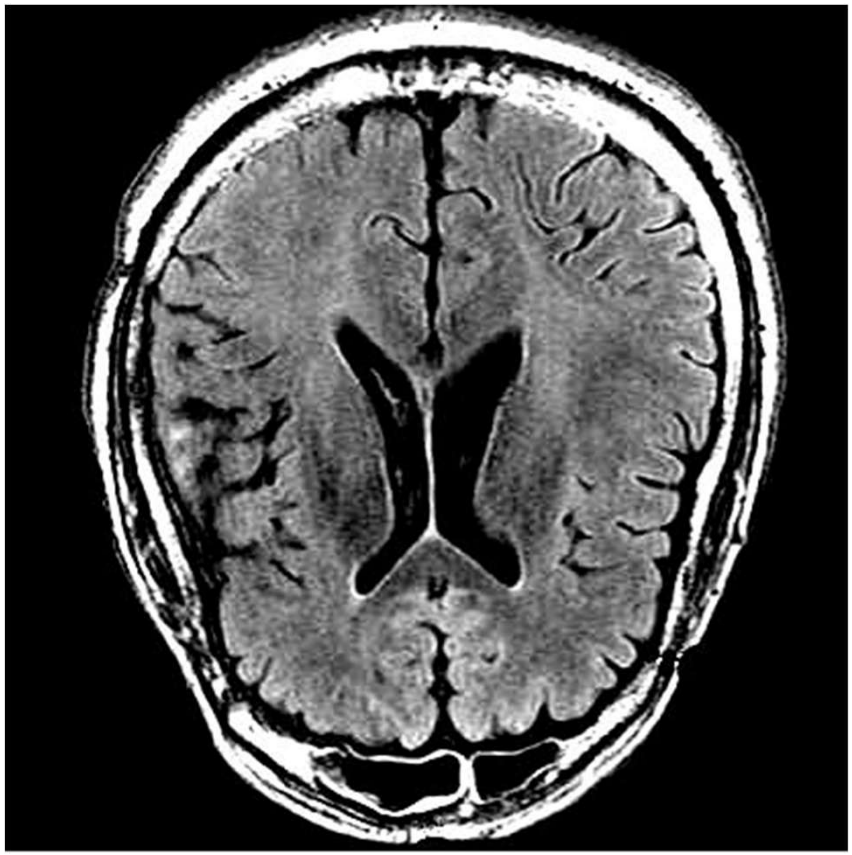
- Loading and preprocessing the images
- Training and testing SVM Model
- Evaluation

```
Accuracy: 0.9821428571428571
              precision    recall  f1-score   support

       axial       1.00      0.97      0.98        88
     coronal       0.99      1.00      0.99        69
    sagittal       0.96      0.99      0.97        67

    accuracy                           0.98       224
   macro avg       0.98      0.98      0.98       224
weighted avg       0.98      0.98      0.98       224
```

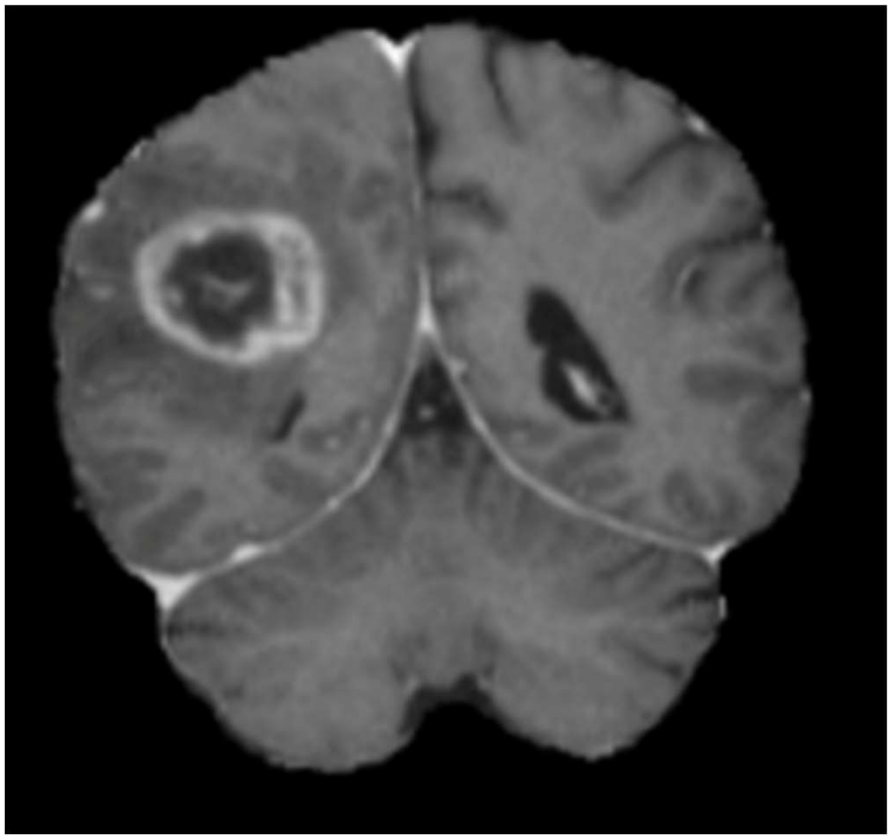
Step4: Using the pre-trained model to classify our unlabeled data:

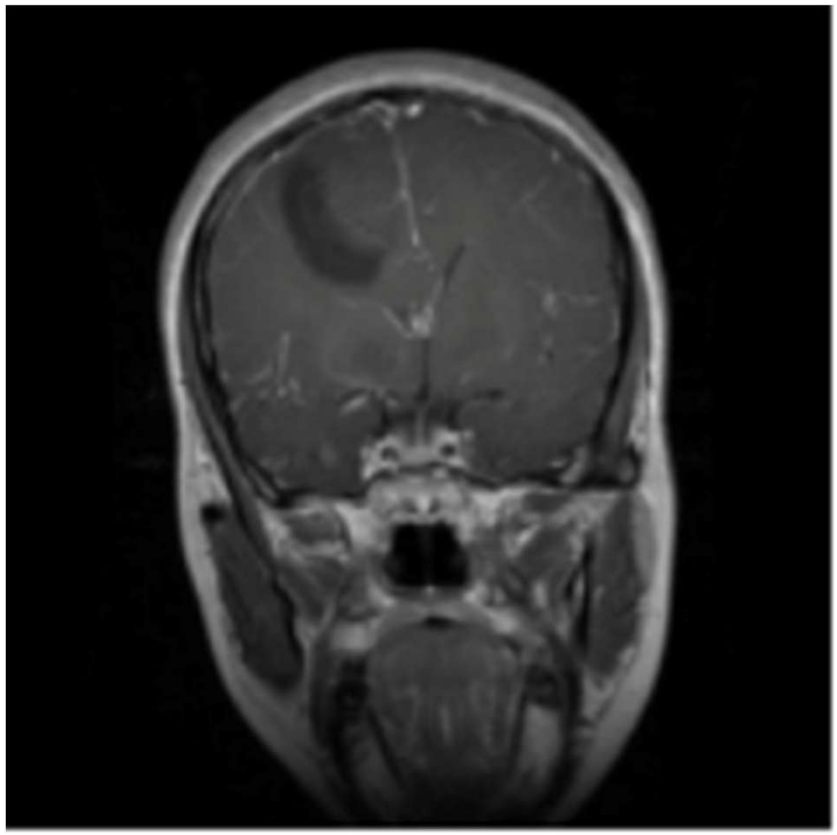




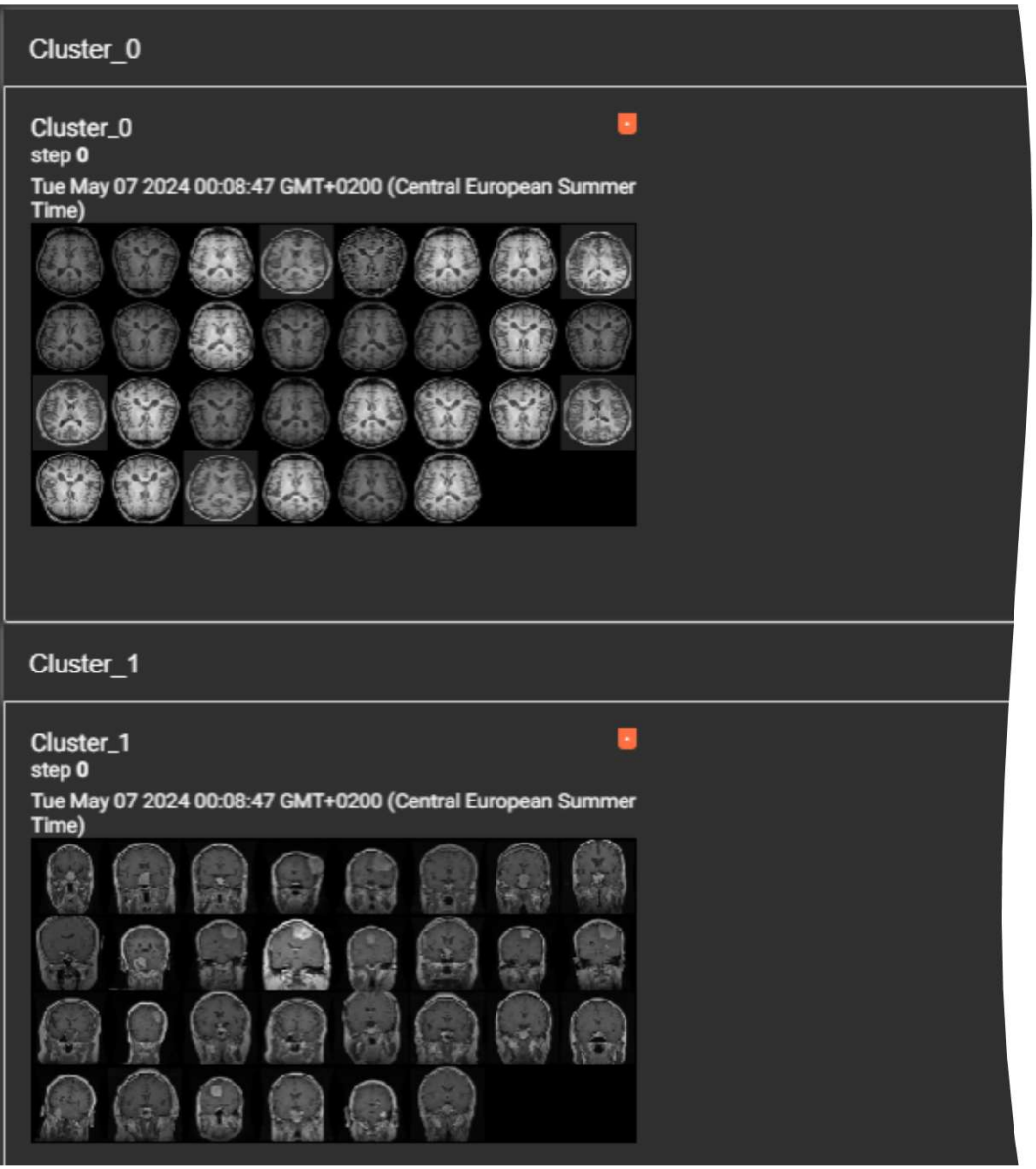


axial





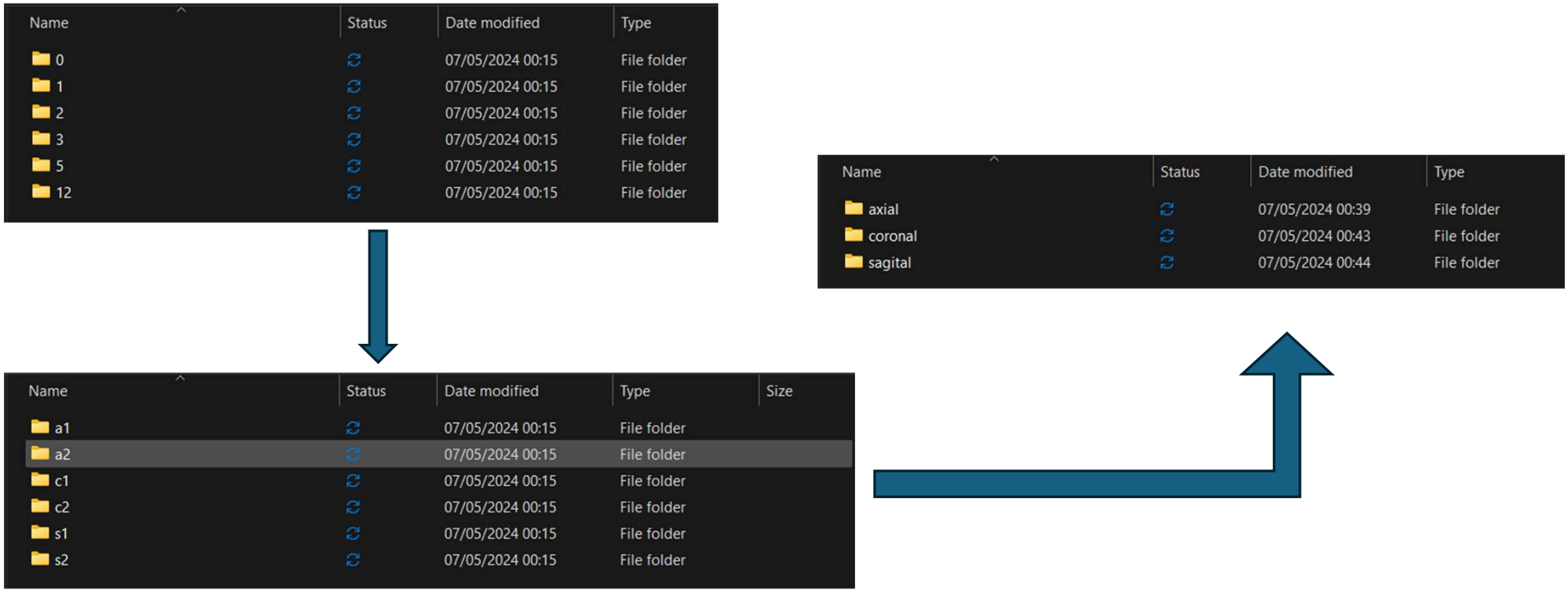
coronal



Unsupervised learning for data labelling

- **STEPS:**
  - Feature extraction: ResNet10 / HOG
  - PCA
  - Clustering : Kmeans

Labeling


Name
Status
Date modified
Type
0
07/05/2024 00:15
File folder
1
07/05/2024 00:15
File folder
2
07/05/2024 00:15
File folder
3
07/05/2024 00:15
File folder
5
07/05/2024 00:15
File folder
12
07/05/2024 00:15
File folder
Name
Status
Date modified
Type
Size
a1
07/05/2024 00:15
File folder
a2
07/05/2024 00:15
File folder
c1
07/05/2024 00:15
File folder
c2
07/05/2024 00:15
File folder
s1
07/05/2024 00:15
File folder
s2
07/05/2024 00:15
File folder
Name
Status
Date modified
Type
axial
07/05/2024 00:39
File folder
coronal
07/05/2024 00:43
File folder
sagital
07/05/2024 00:44
File folder

Experiment with Random Forest ➔ 1st insight

Classification Report:

	precision	recall	f1-score	support
0	0.97	0.64	0.77	306
1	0.98	0.98	0.98	405
2	0.74	0.99	0.84	300
accuracy			0.88	1011
macro avg	0.89	0.87	0.86	1011
weighted avg	0.90	0.88	0.88	1011