

Brain MRI Classification

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DSIR-1128

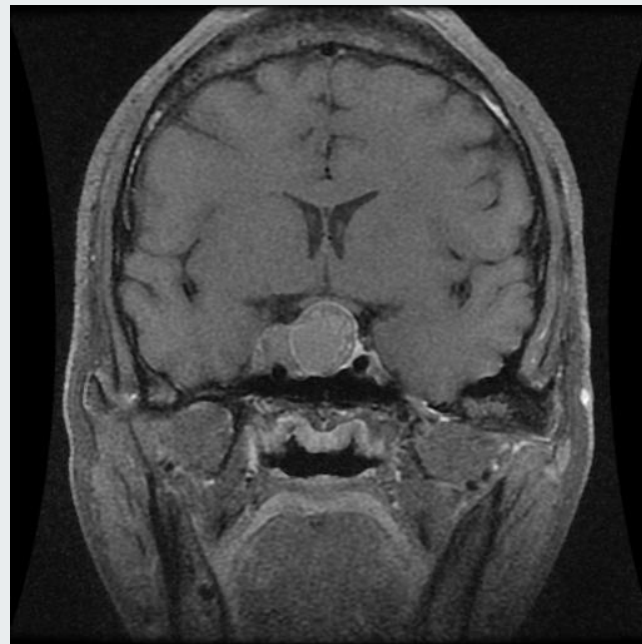
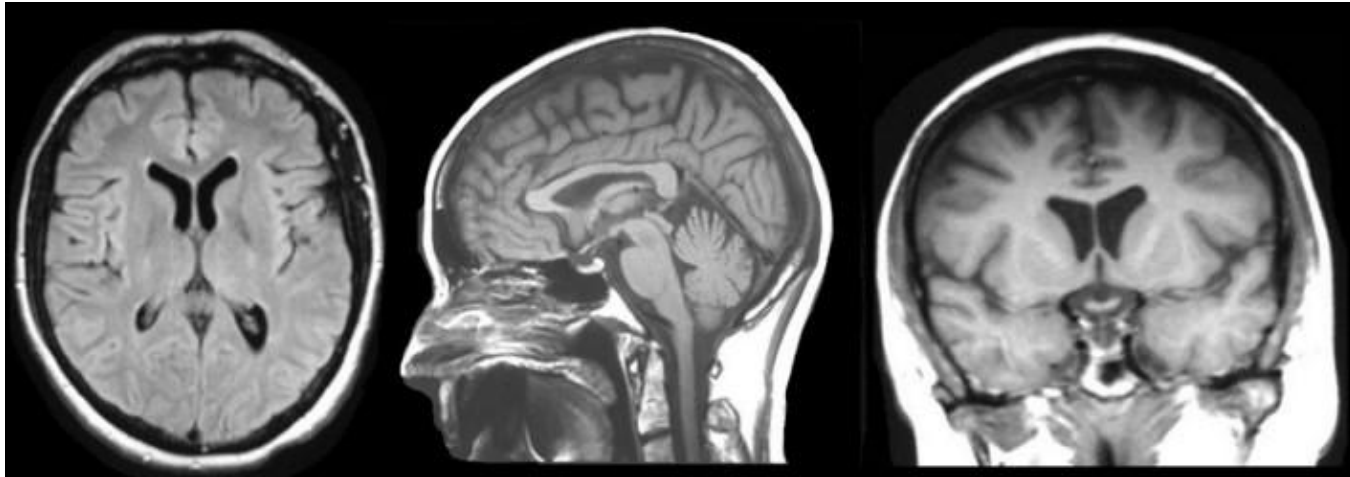


image from [link](#)

Classify brain MRI.
Find severity of Alzheimer's disease or
type of Brain Tumor



What is MRI?

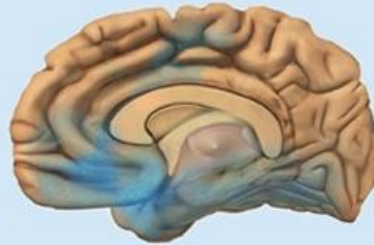


image from [link](#)

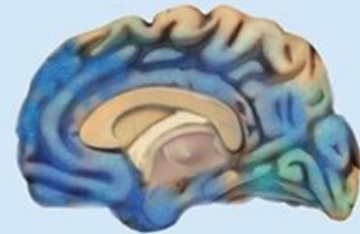
Alzheimer's disease



Preclinical
Alzheimer's Disease

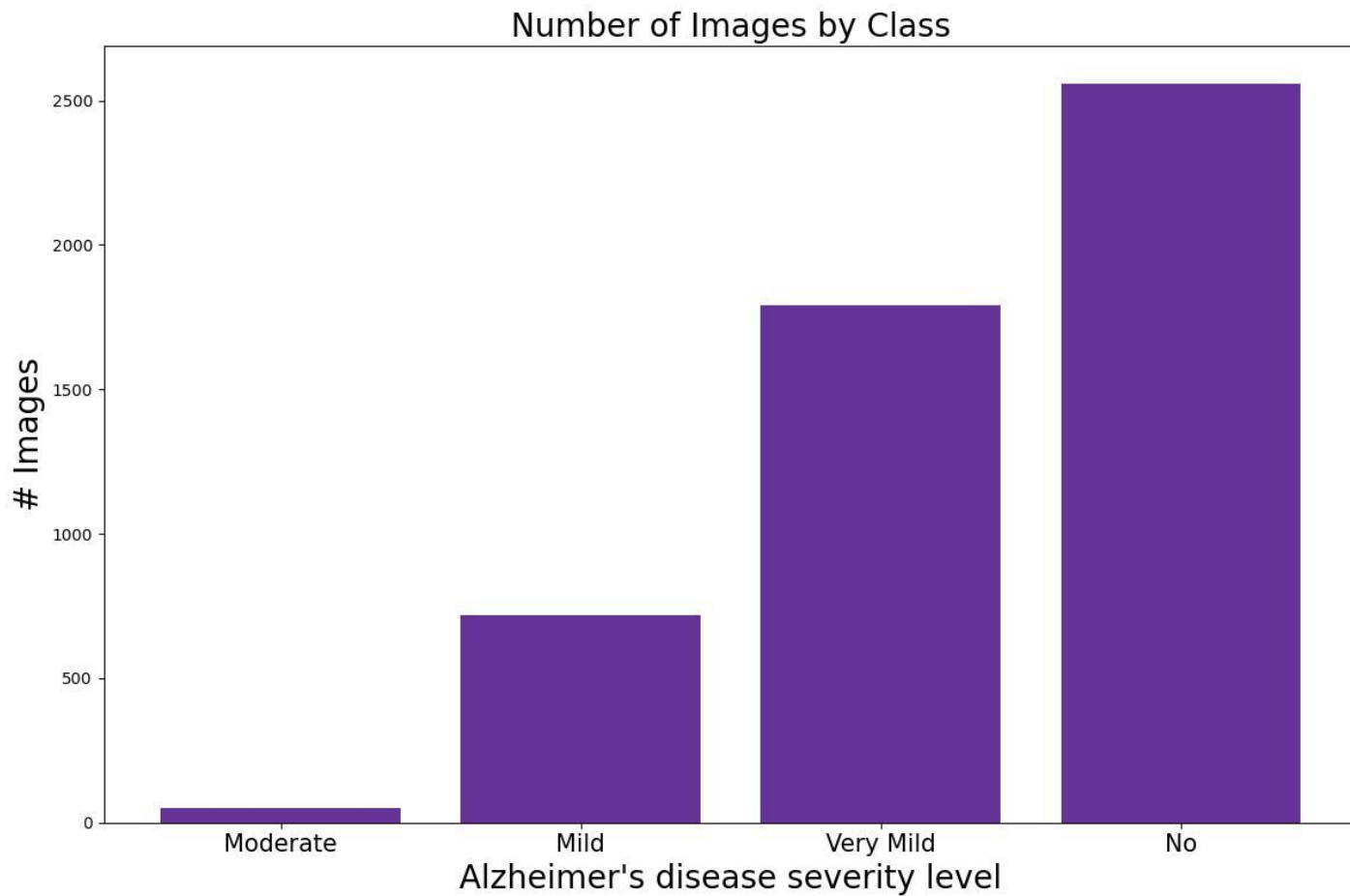


Mild to moderate
Alzheimer's Disease



Severe
Alzheimer's Disease

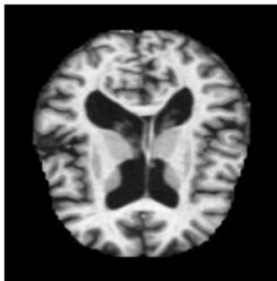
Alzheimer's disease evaluable data



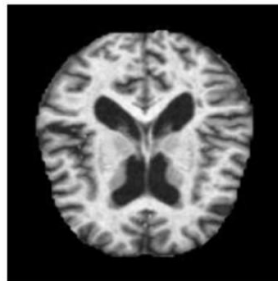
Alzheimer's disease



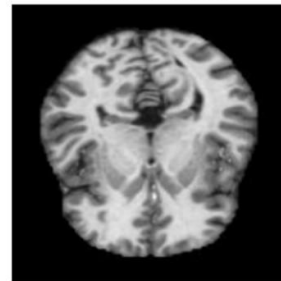
VeryMildDemented



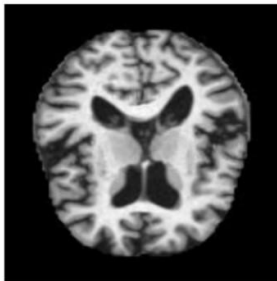
VeryMildDemented



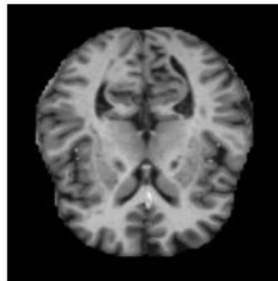
NonDemented



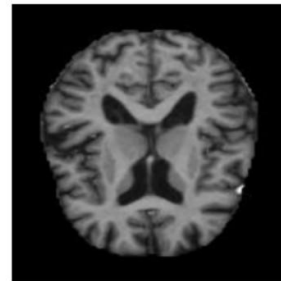
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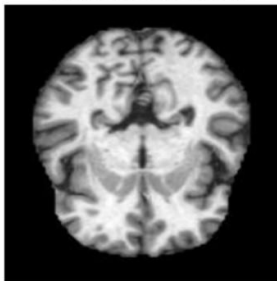
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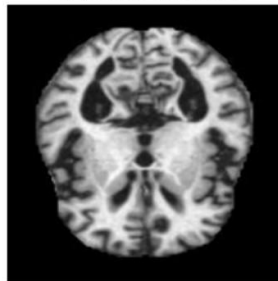
NonDemented



VeryMildDemented



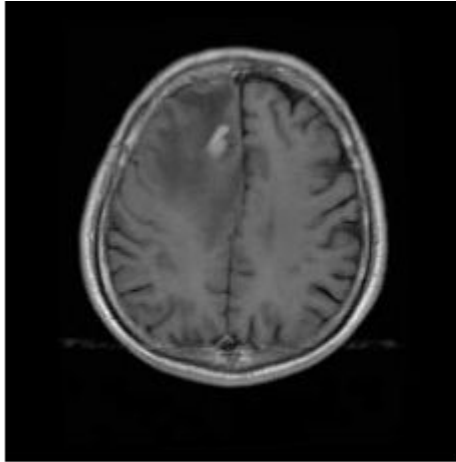
VeryMildDemented



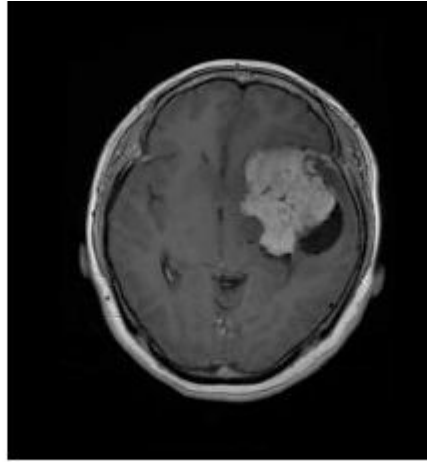
MildDemented



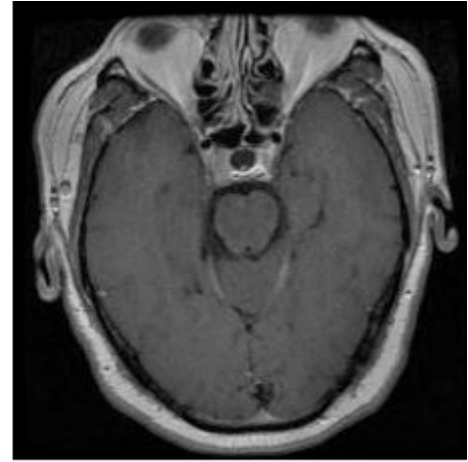
Brain Tumor



(a) glioma

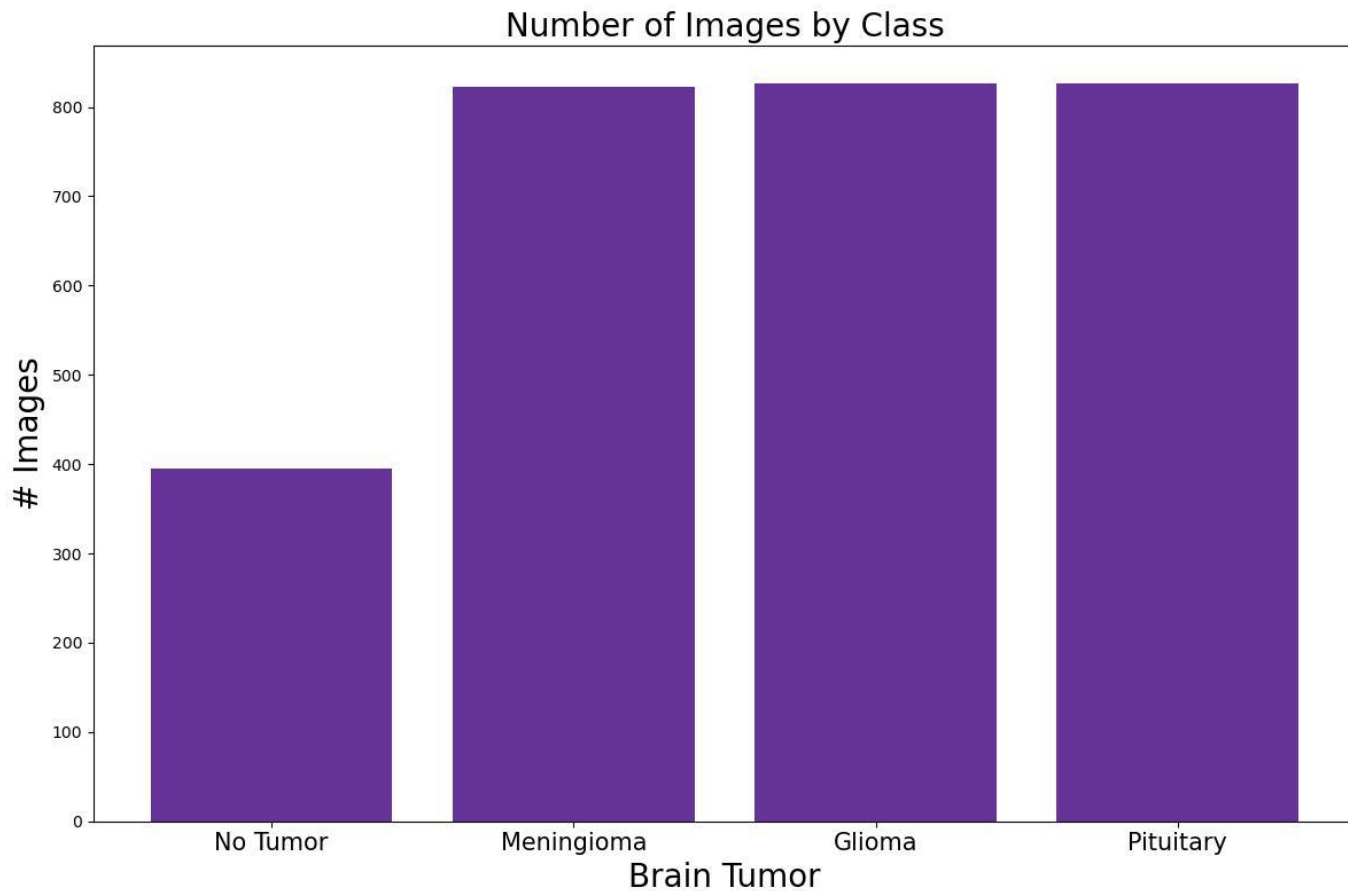


(b) meningioma



(c) pituitary

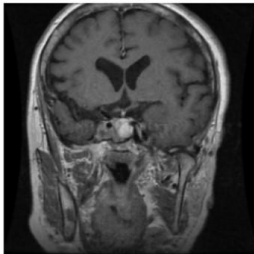
Brain Tumor evaluable data



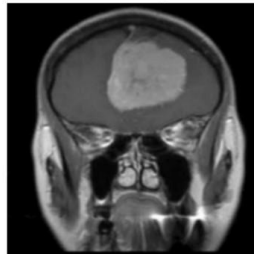
Brain Tumor



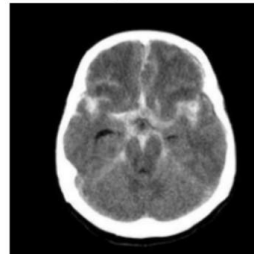
pituitary_tumor



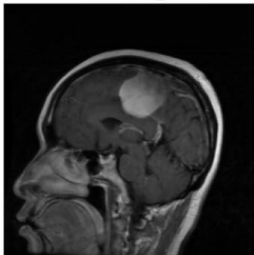
meningioma_tumor



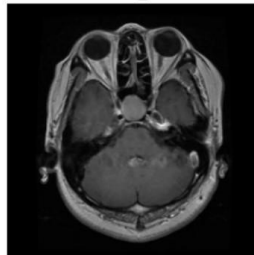
no_tumor



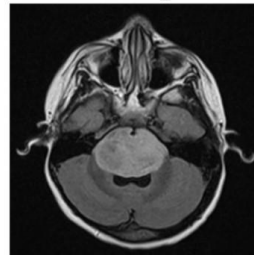
meningioma_tumor



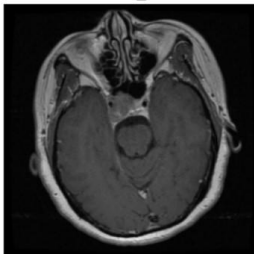
pituitary_tumor



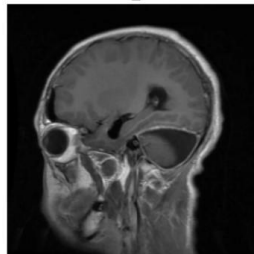
meningioma_tumor



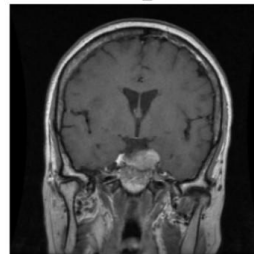
pituitary_tumor



glioma_tumor



pituitary_tumor



?? CNN ??

?? Augmentation??

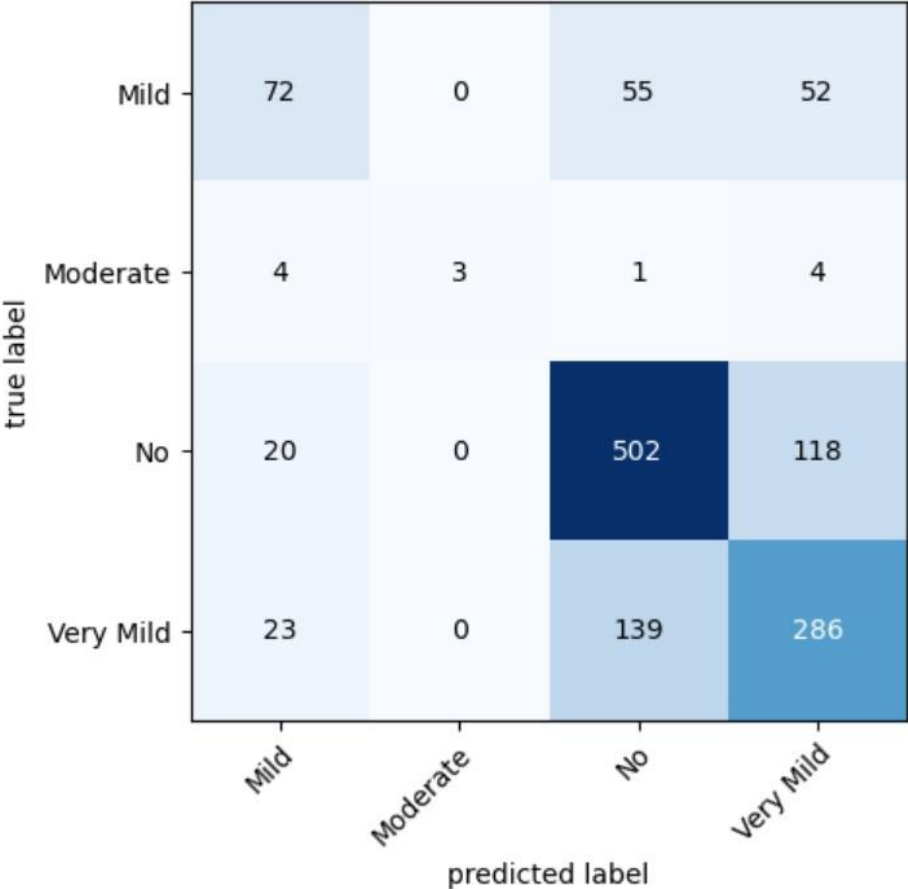
?? Class weights ??

?? Pre-trained ??



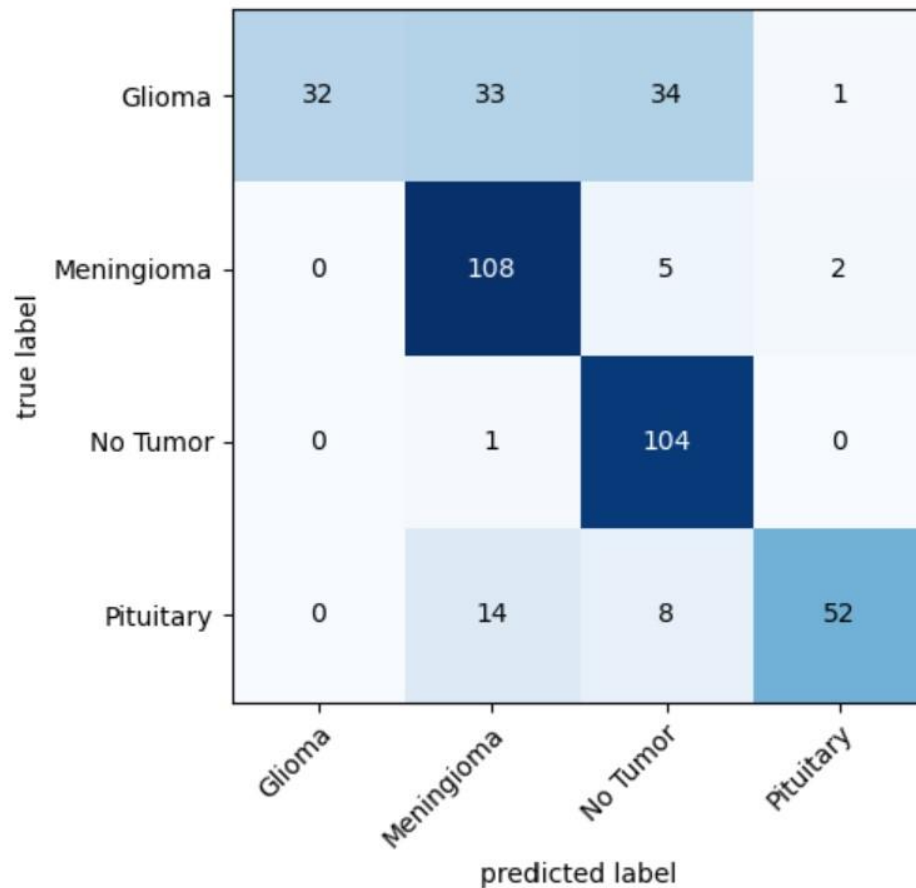
Alzheimer's disease with ResNet50

Test
accuracy:
67%

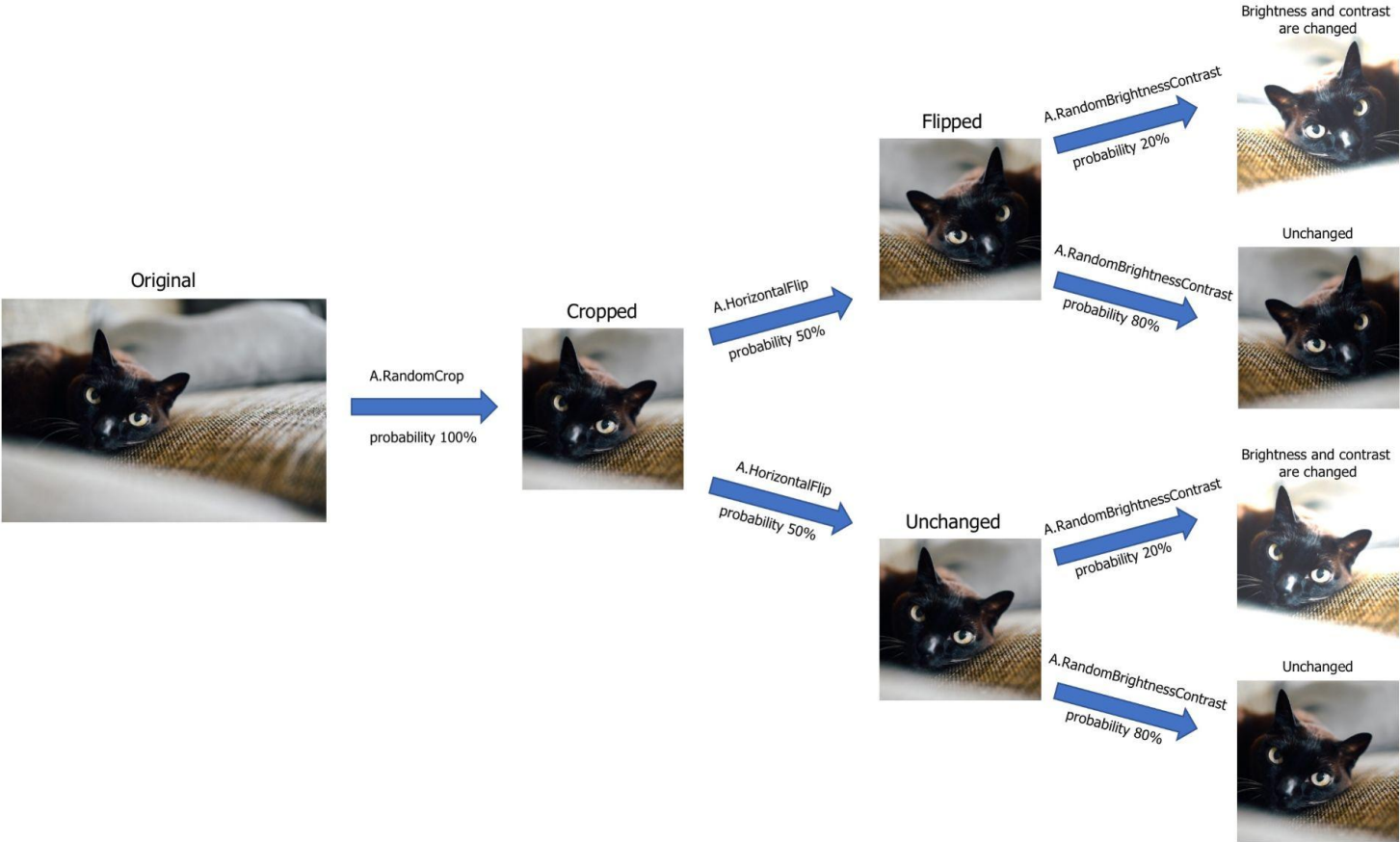


Brain Tumor with EfficientNetV2S

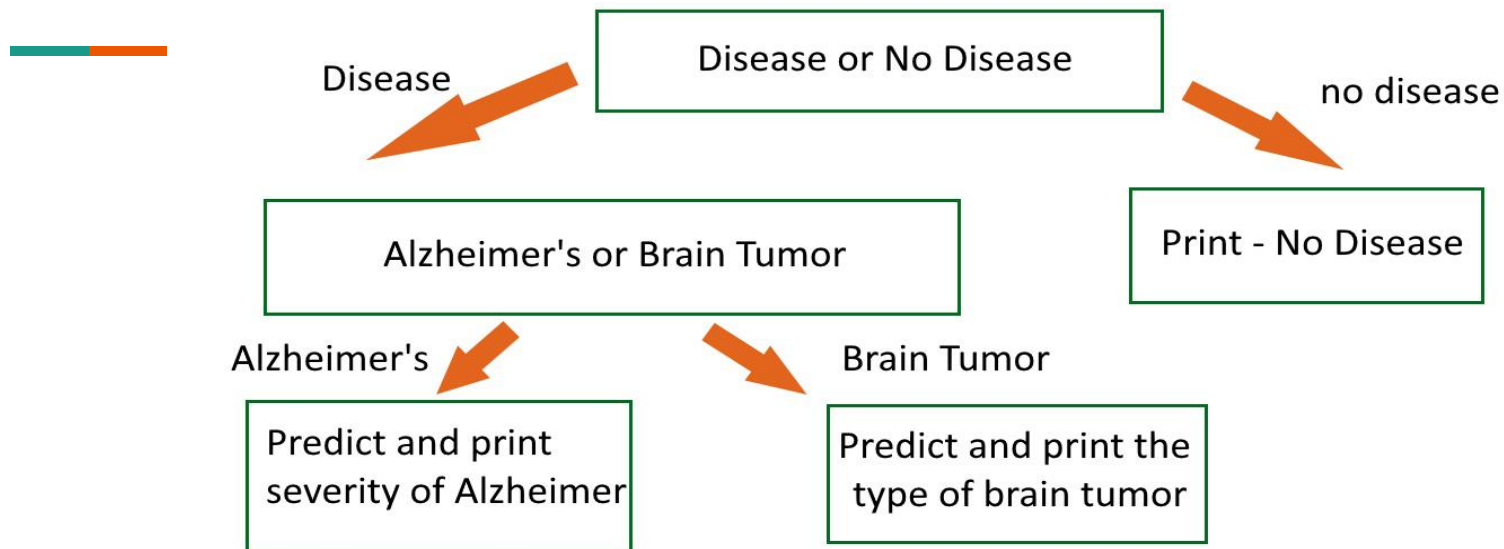
Test
accuracy:
75%



Augmentation with Albumentations



Application architecture



Evaluation of the application

Baseline:
37%

Test
accuracy:
70%

Do you have Alzheimer's disease or Brain tumor?

Please upload a brain MRI image to determine whether it indicates the presence of Alzheimer's disease and its severity, a brain tumor and its type, or if there is no evidence of disease.

Upload your image here



Drag and drop file here

Limit 200MB per file • PNG, JPG, JPEG

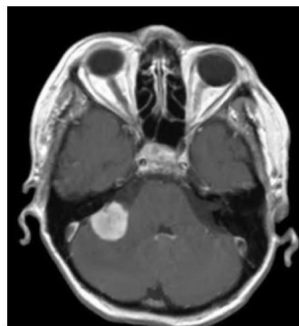
Browse files



image(4).jpg 28.6KB



Submit



The MRI image has an 83.69% probability of indicating the presence of a Meningioma tumor



Conclusions

I have developed an application
that can classify individual brain
MRI images



Recommendations

- Add more diseases
- Collaborate with medical professionals
- Combine predictions on a series of images from one patient



Thank you!