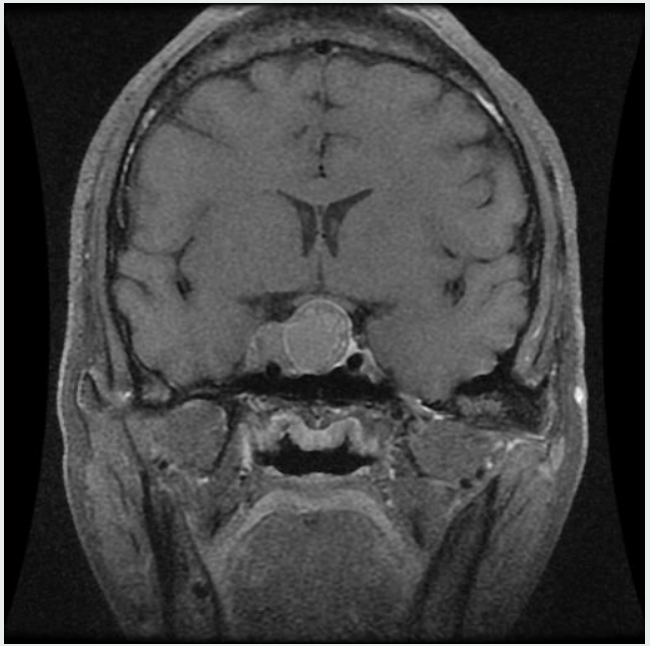
Brain MRI Classification



by Tatiana Patrusheva
DSIR-1128

image from link

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

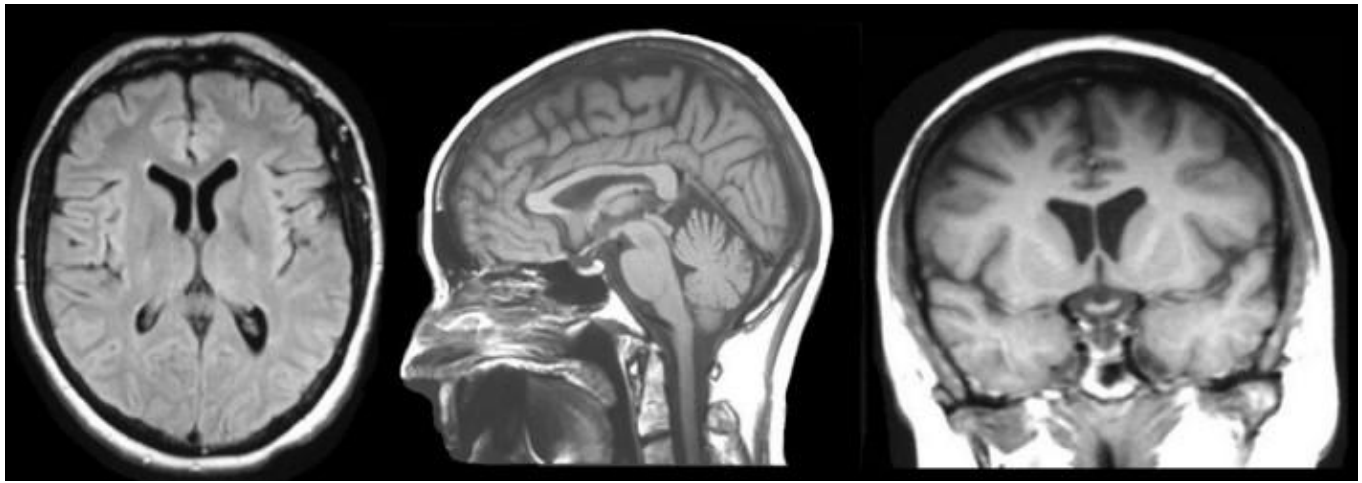


image from link

What is MRI?

image from link

Alzheimer's disease

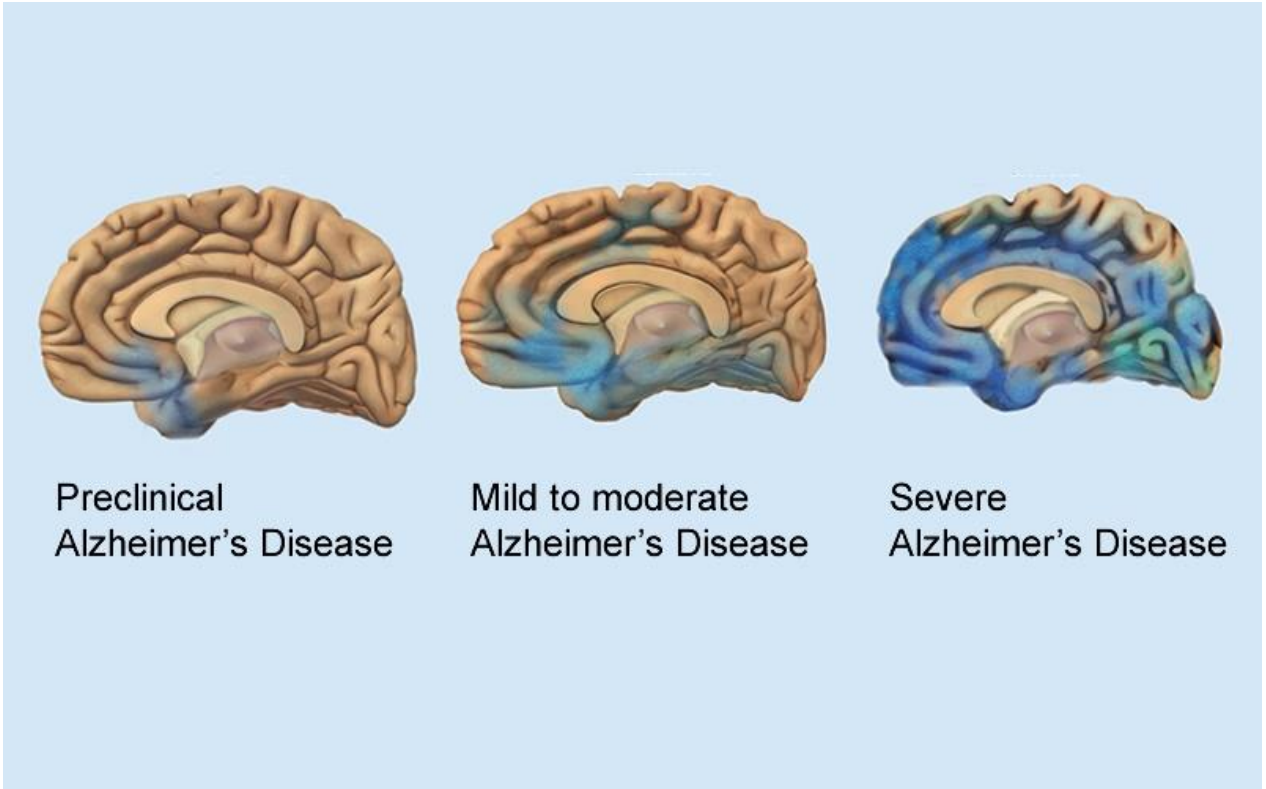
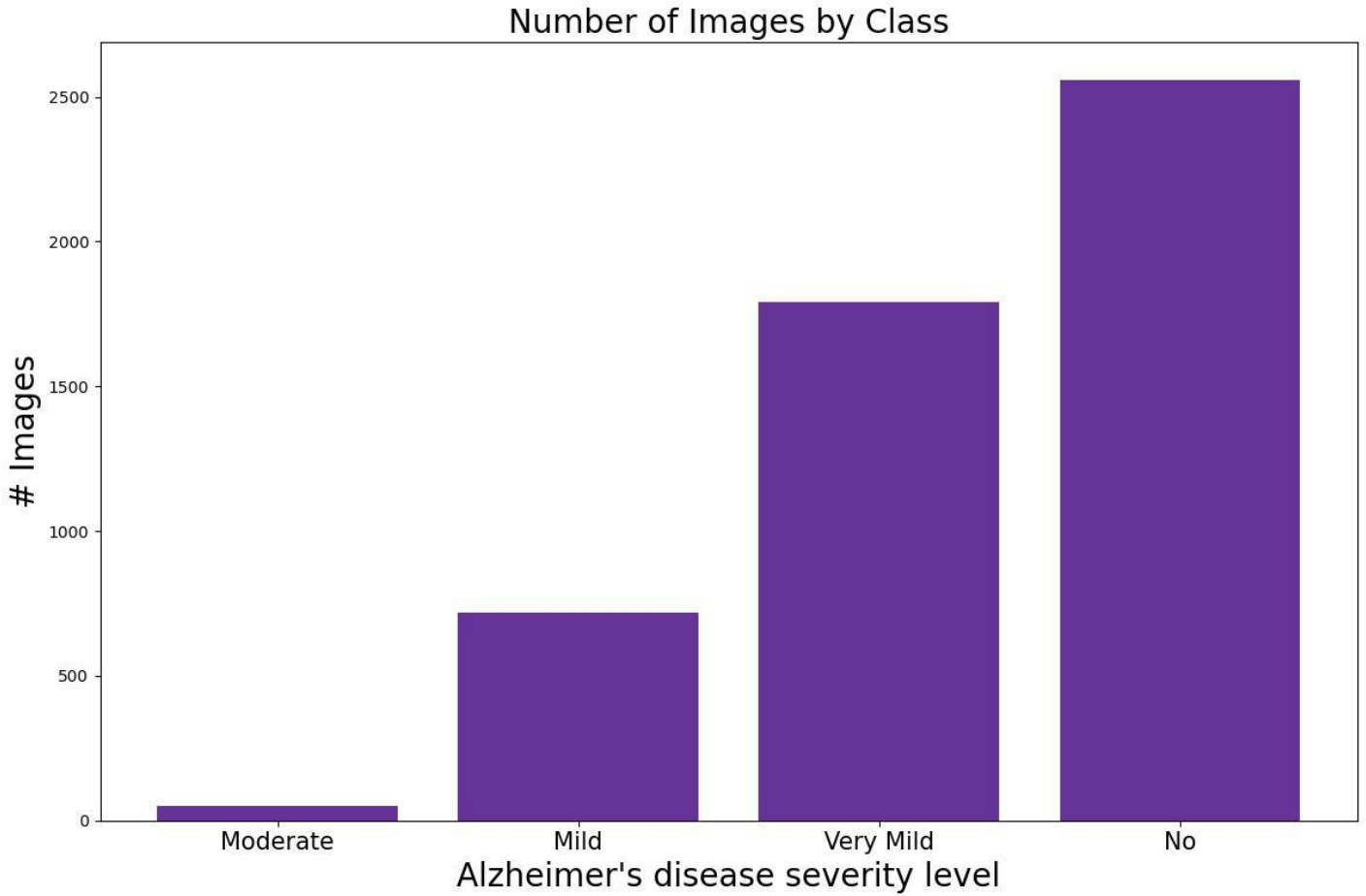
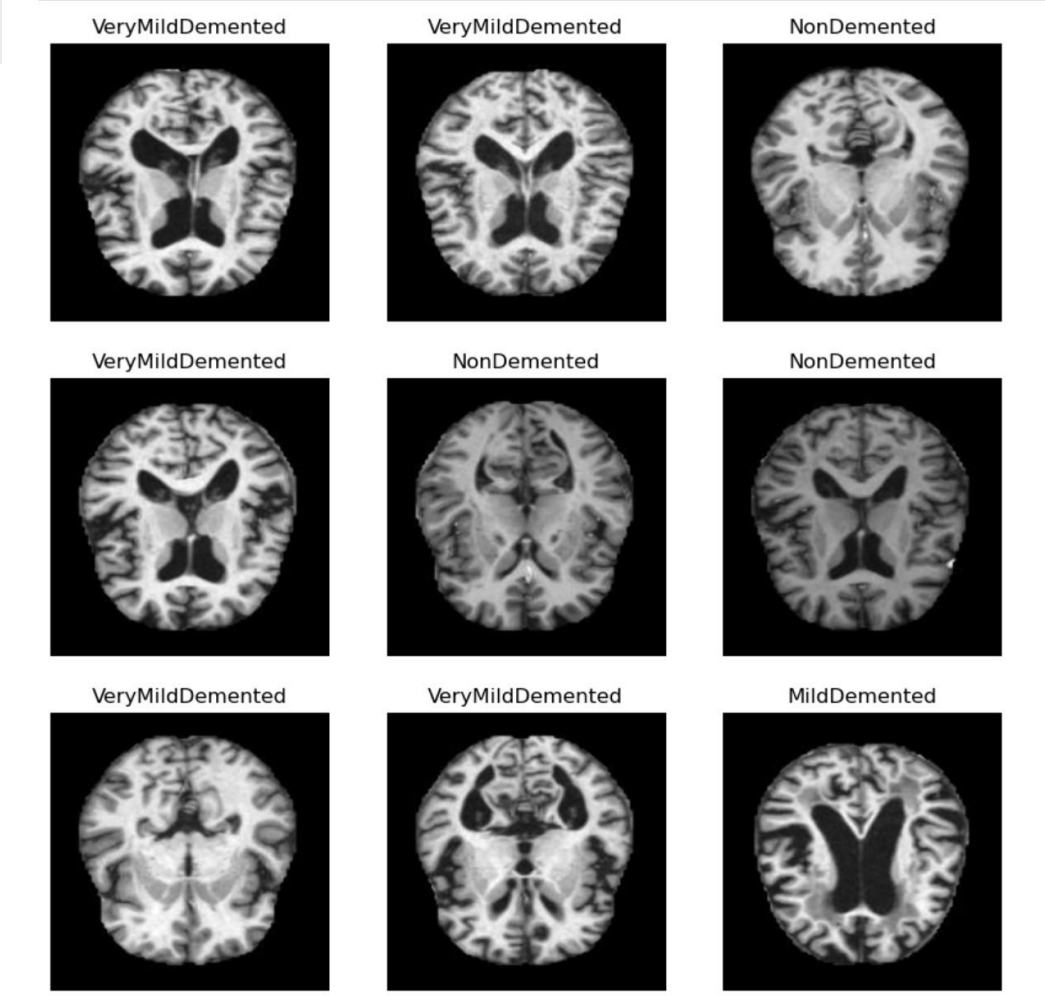


image from link

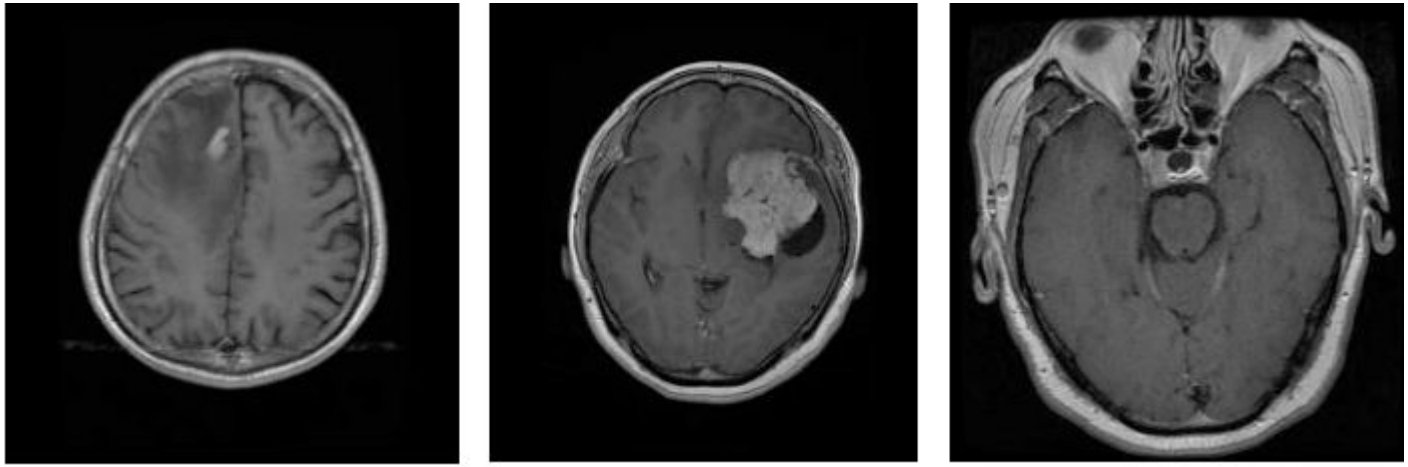
Alzheimer's disease evaluable data



Alzheimer's disease



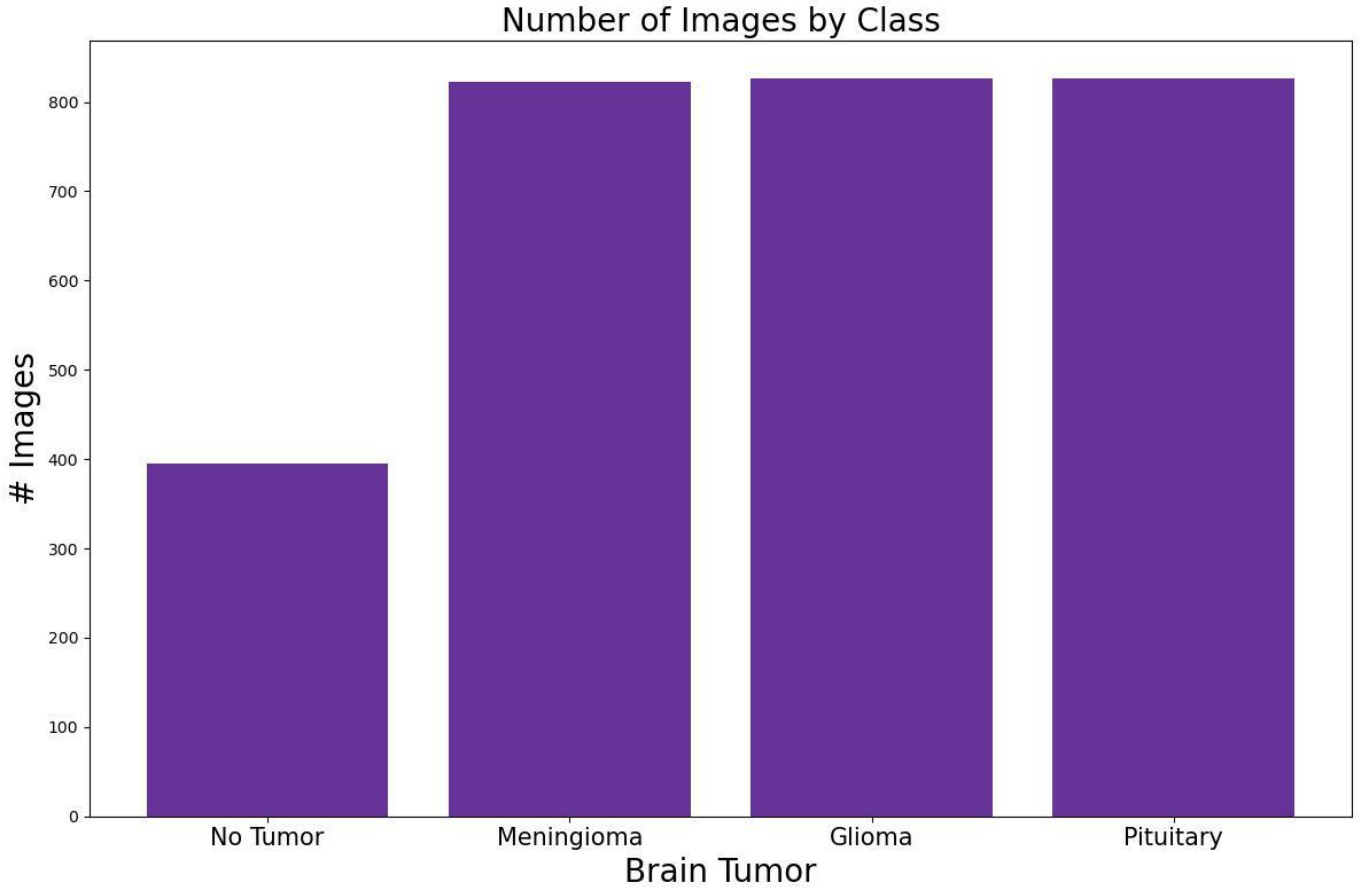
Brain Tumor



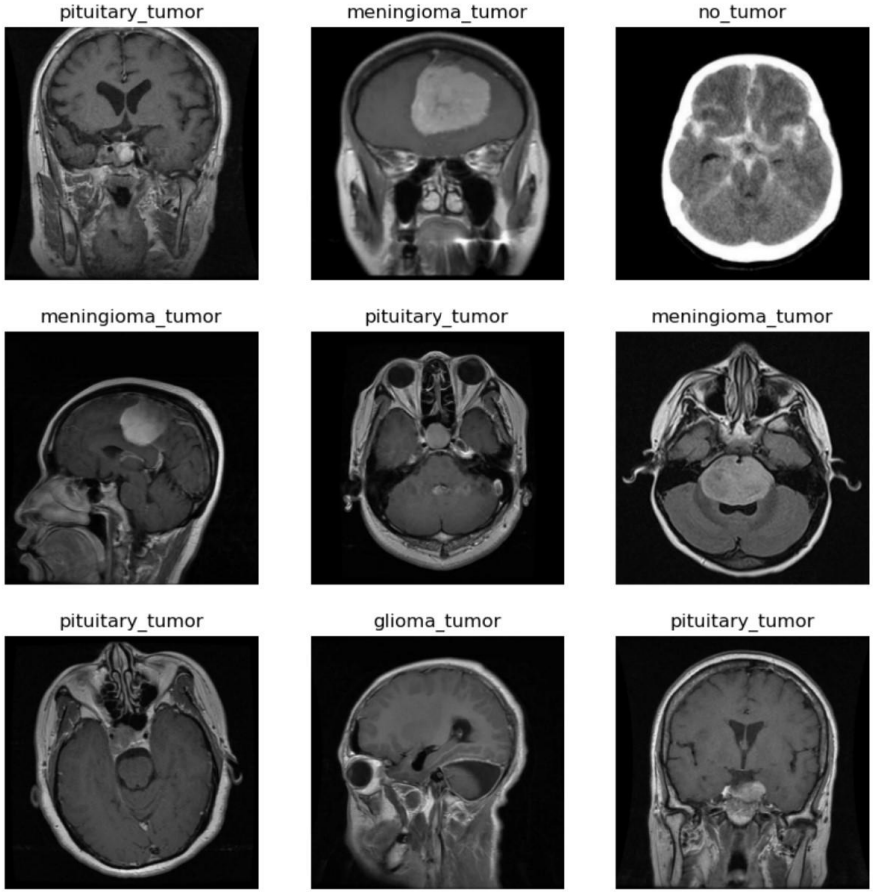
(a) glioma (b) meningioma (c) pituitary

image from link

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* ??

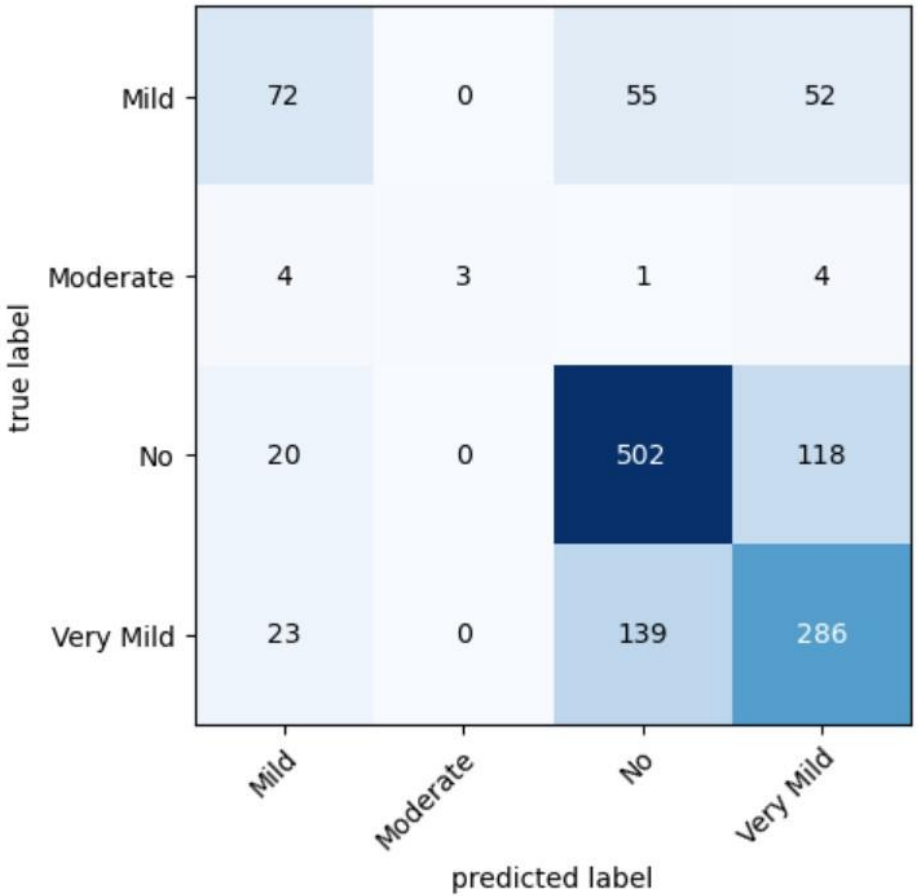
?? *Augmentation*??

?? Class weights ??

?? *Pre-trained* ??

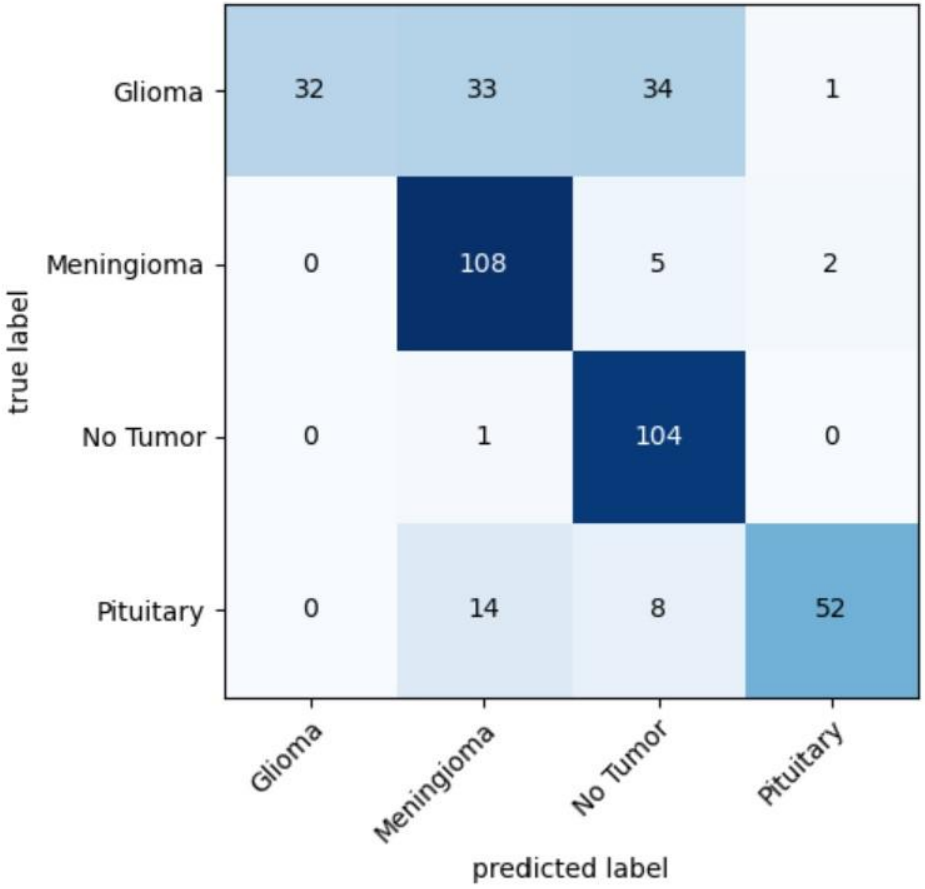
Alzheimer's disease with ResNet50

Test accuracy: 67%



Brain Tumor with EfficientNetV2S

Test accuracy: 75%



Augmentation with Albumentations

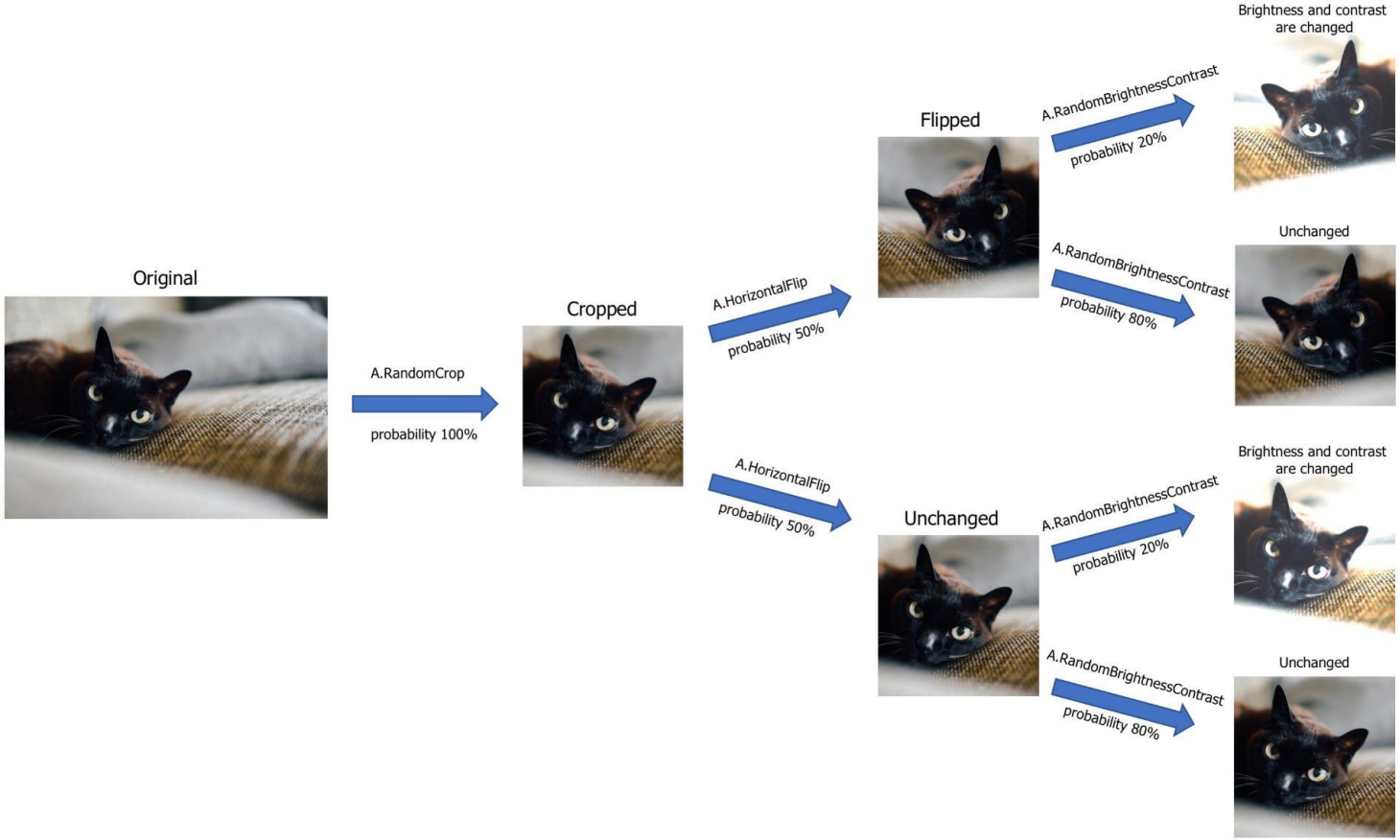
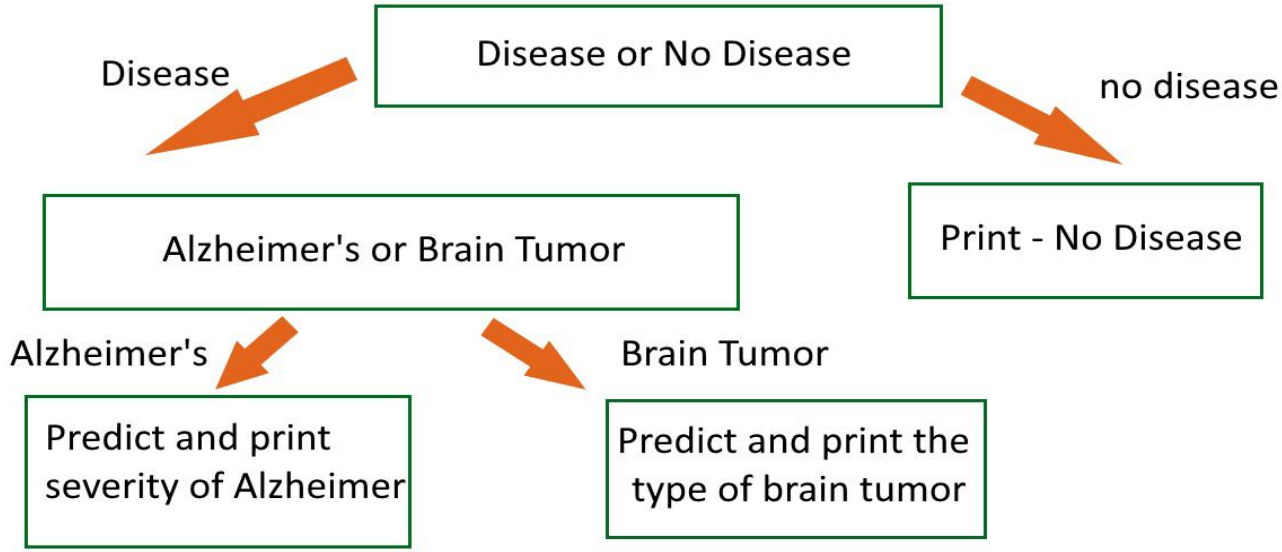


image from [link]

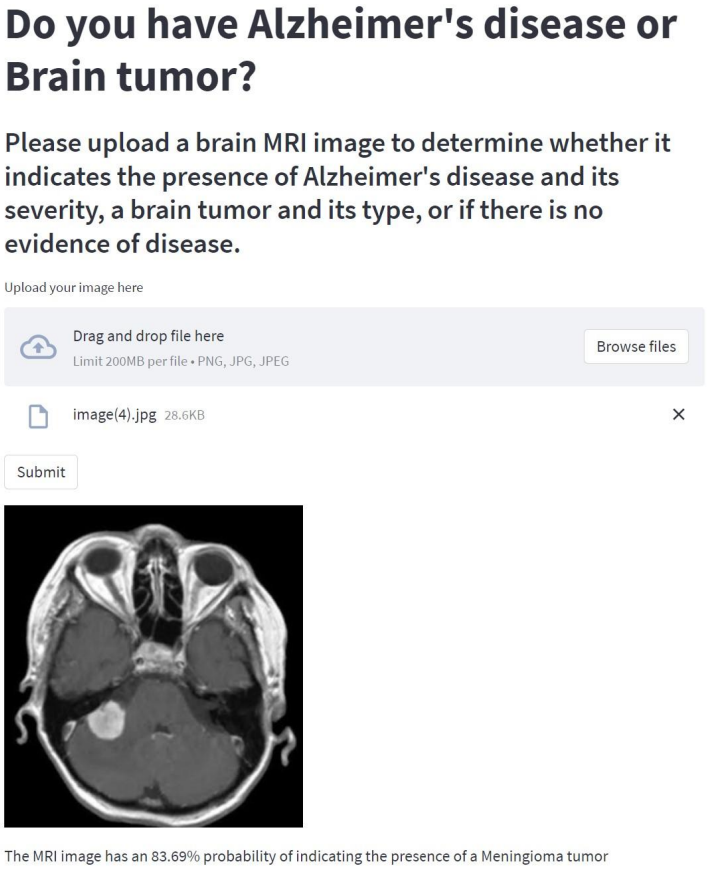
Application architecture



Evaluation of the application

Baseline: 37%

Test accuracy: 70%



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!