SDAIA T5 DATA SCIENCE BOOTCAMP

Brain Tumor MRI

Deep Learning

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Agenda

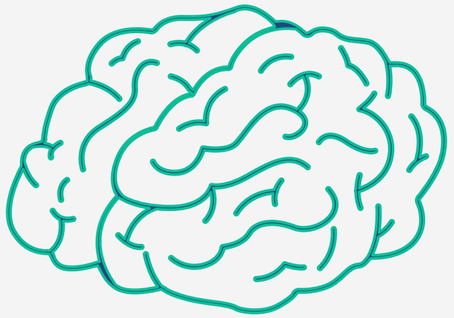
- Introduction
- Dataset
- Transfer Learning Models
- Complex Neural Networks
- Deployment
- Tools
- Conclusion

Introduction

A brain tumor is a collection, or mass, of abnormal cells in your brain. Brain tumors can be cancerous (malignant) or noncancerous (benign). When benign or malignant tumors grow. This can cause brain damage, and it can be life-threatening.

Inspiration

Building a model to determine whether there is a brain tumor or not and its type if any, using Convolutional Neural Networks



Dataset Information

Train

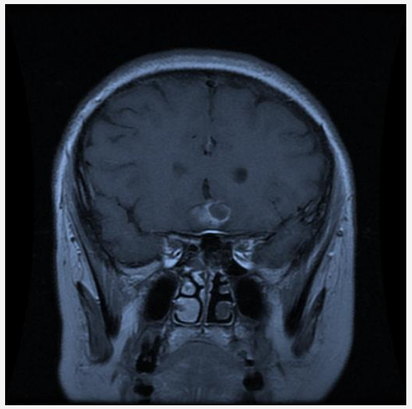
Validation

Test

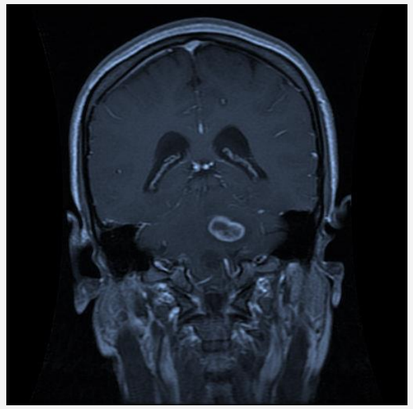
Four classes for each of them

Sample of Dataset

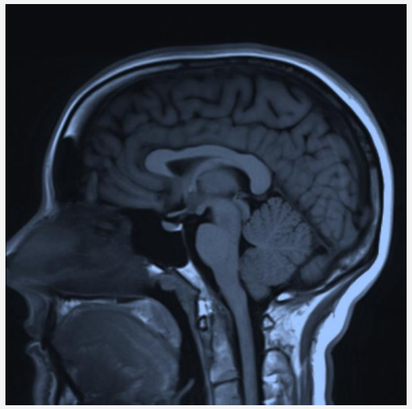
Pituitary



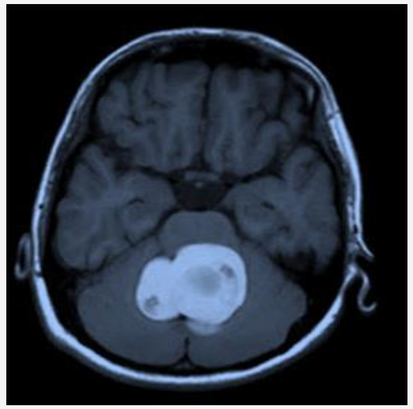
Glioma



Notumor



Meningioma



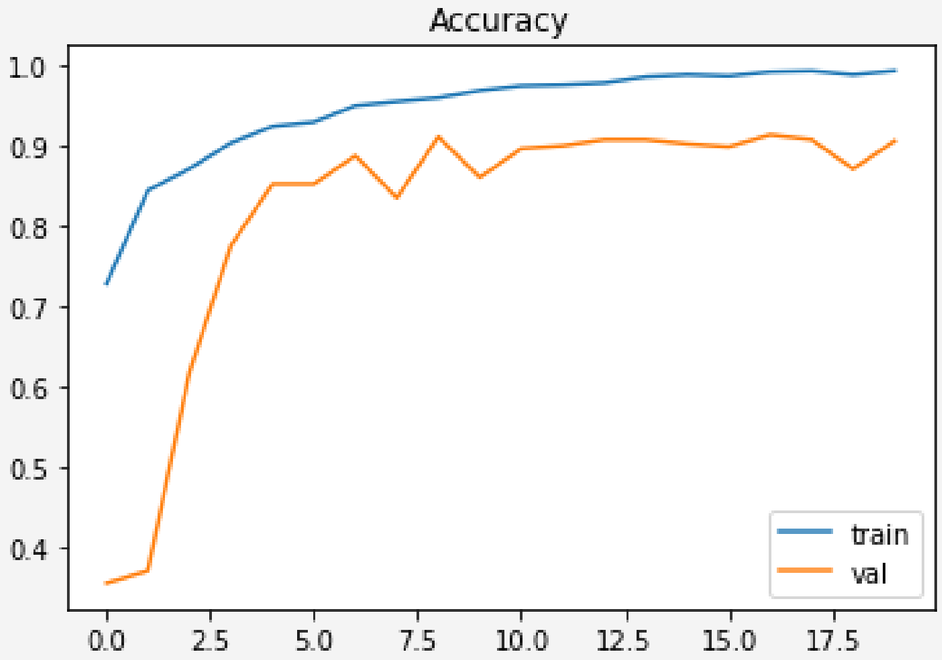
Transfer Learning Models

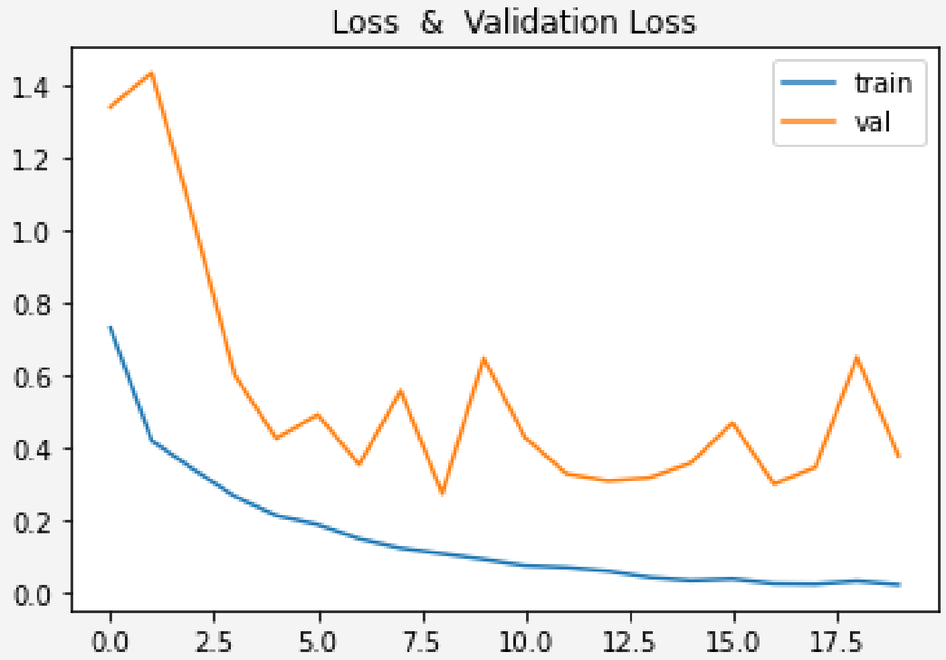
Model	Acuraccy	val_loss	val_accuracy
ResNet50	0.80	4.6	0.77
VGG16	0.82	1.1	0.73
VGG19	0.76	1.4	0.58

Complex Neural Networks

01

Conv2D
Size of Filter = (7,7)
MaxPooling2D = 2.2
Dropout = 0.3
Dense = 1024
Activation = SoftMax
Optimizer = SGD





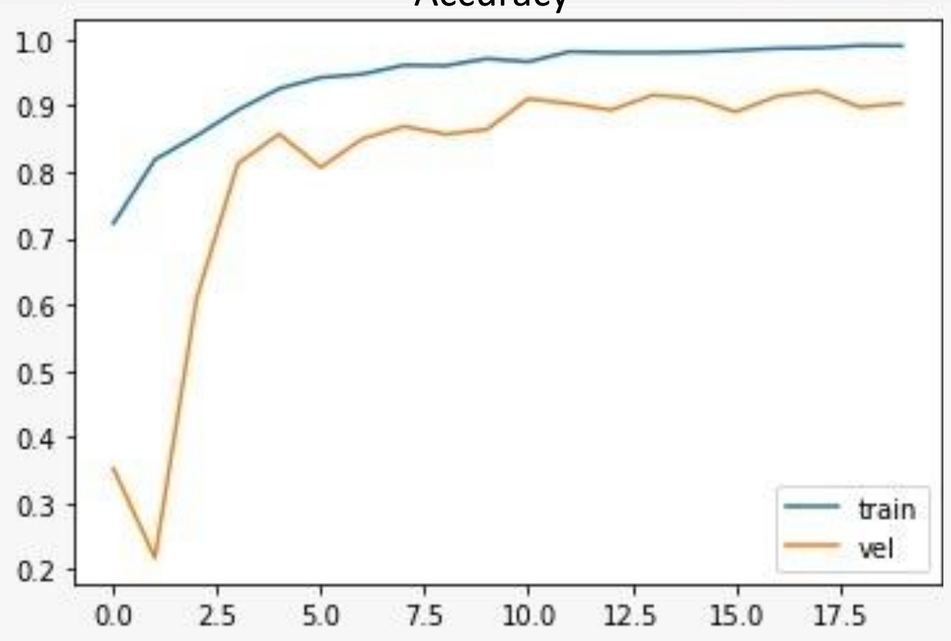
Test Accuracy = 99%

Complex Neural Networks

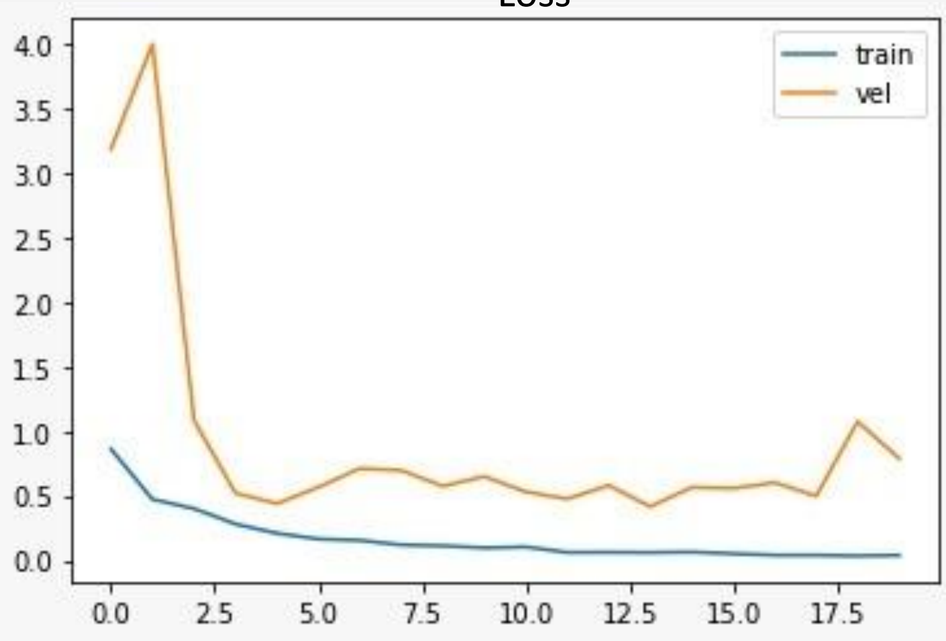
02

Conv2D
Size of Filter = (3,3)
MaxPool2D = (2,2)
Dropout = 0.5
Dense = 64
Activation = Soft-Max
Optimizer = Adam

Accuracy

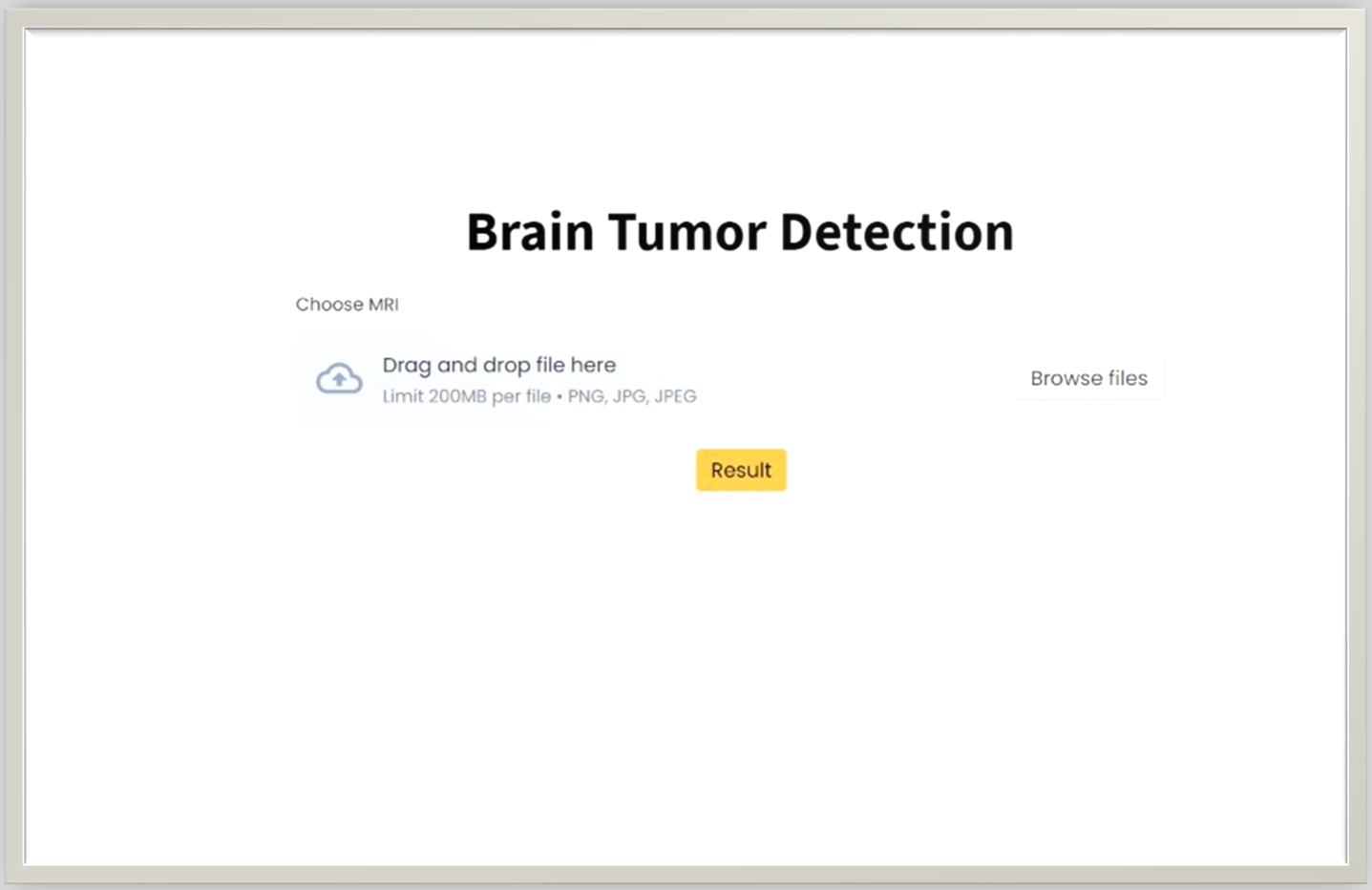


Loss



Test Accuracy = 98%

Deployment


Brain Tumor Detection
Choose MRI
Drag and drop file here
Limit 200MB per file • PNG, JPG, JPEG
Browse files
Result

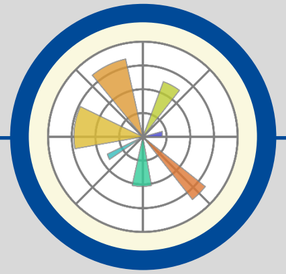
Tools

Tensorflow

Google Colab

Keras

Python



Matplotlib

PyCharm

Streamlit

Conclusion

The importance of early diagnosis of brain tumor, as early diagnosis of brain tumor can contribute to ensuring immediate treatment that reduces the risks of death, and through artificial intelligence, we have contributed to building a model for diagnosing the brain tumor with high speed and accuracy.

Future Works:

Develop the model to include all types of radiation

From the left: Nouf, ***Dr. Ptrick,*** *Abdulmajeed, Ahmad*

Thank you Dr. Patrick!

أكاديمية سدايا
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Thank you!

Thank you too!

Any Questions?

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