




TEAM - VIBES

HEALTHCARE SOLUTIONS

PRESENTATION BY
ADITI RASTOGI(RA191003010219)
TIMSAL ZEHRA RIZVI(RA1911003010211)
RITIK CHAUDHARY(RA911003010215)
SHRESTH KAPOOR(RA1911003010220)



Need of Artificial Intelligence in Medical Field.

To improve the diagnostic process, the implementation of artificial intelligence in the medical field is a most exciting step. Artificial intelligence makes the screening, diagnosis and medical treatment of cancer and other inheritance diseases easier. Artificial intelligence also serves the patients by providing symptoms checker facilities.

Fields of Focus

PARKINSON DISEASE

Parkinson's disease is a brain disorder that leads to shaking, stiffness, and difficulty with walking, balance, and coordination. Parkinson's symptoms usually begin gradually and get worse over time. As the disease progresses, people may have difficulty walking and talking.

A disorder of the central nervous system that affects movement, often including tremors. Nerve cell damage in the brain causes dopamine levels to drop, leading to the symptoms of Parkinson's.

BRAIN TUMOR

A brain tumor is a mass or growth of abnormal cells in your brain.

Many different types of brain tumors exist. Some brain tumors are noncancerous (benign), and some brain tumors are cancerous (malignant). Brain tumors can begin in your brain (primary brain tumors), or cancer can begin in other parts of your body and spread to your brain as secondary (metastatic) brain tumors. Our model helps in detecting glioma, meningioma and pituitary tumors

RETINAL FUNDUS DISEASES

It is the interior lining of the eyeball, including the retina (the light-sensitive screen), optic disc (the head of the nerve to the eye), and the macula (the small spot in the retina where vision is keenest).

Without prompt diagnosis and treatment, retinal fundus diseases can cause irreversible vision loss.

PARKINSON'S DISEASE PREDICTION APPROACH

THIS MODEL INVOLVES IMPLEMENTATION OF CONCEPTS LIKE KNN CLASSIFIER , GUASSIAN NB CLASSIFIER ,DECISION TREE CLASSIFIER AND LOGISTIC REGRESSION

INPUTS ARE:

MDVP:Fo(Hz) MDVP:Fhi(Hz) MDVP:Flo(Hz) MDVP:Jitter(%)
MDVP:Jitter(Abs) MDVP:RAP MDVP:PPQ ,Jitter:DDP ,MDVP:Shimmer
,MDVP:Shimmer(dB) ,Shimmer:APQ3 Shimmer:APQ5 MDVP:APQ
Shimmer:DDA NHR HNR RPDE DFA spread1 spread2 D2 PPE

CODE EXAMPLES:

Predicting Model

```
In [87]: Fo=input("Enter the field")
        Fh1=input("Enter the field")
        Flo=input("Enter the field")
        Jitter=input("Enter the field")
        Jitter_abs=input("Enter the field")
        RAP=input("Enter the field")
        PPQ=input("Enter the field")
        DDP=input("Enter the field")
        Shimmer=input("Enter the field")
        Shimmer_db=input("Enter the field")
        APQ3=input("Enter the field")
        APQ5=input("Enter the field")
        APQ=input("Enter the field")
        DDA=input("Enter the field")
        NHR=input("Enter the field")
        HNR=input("Enter the field")
        RPQE=input("Enter the field")
        DFA=input("Enter the field")
        spread1=input("Enter the field")
        spread2=input("Enter the field")
        D2=input("Enter the field")
        PPE=input("Enter the field")
```

```
Enter the field202.26600
Enter the field211.60400
Enter the field197.07900
Enter the field0.00180
Enter the field0.000009
Enter the field0.00093
Enter the field0.00107
Enter the field0.00278
Enter the field0.00954
Enter the field0.08500
Enter the field0.00469
Enter the field0.00606
Enter the field0.00719
Enter the field0.01407
Enter the field0.00072
Enter the field32.68400
Enter the field0.368535
Enter the field0.742133
Enter the field-7.695734
Enter the field0.178540
Enter the field1.544609
Enter the field0.056141
```

BRAIN TUMOR DETECTION AND PREDICTION

IN THIS MODEL WE ARE USING EFFICIENT NETS TO SCAN BRAIN IN ORDER TO DETECT TUMOR ,IT IS BASICALLY A MAGNETIC RESONANCE IMAGING(MRI) SCANNER.

FURTHER IT PREDICTS THE TYPE OF BRAIN TUMOR:

1.GLIOMA

2.MENINGIOMA

3.PITUITARY

CODE EXAMPLES:

```
In [42]: import sys
import os
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import cv2
import shutil
import tensorflow as tf
import PIL.Image as Image
from tensorflow import keras
from tensorflow.keras.applications.imagenet_utils import decode_predictions
from tensorflow.keras.applications import *
from tensorflow.keras import models
from tensorflow.keras import layers
from keras.preprocessing.image import ImageDataGenerator
from sklearn import model_selection
from tqdm import tqdm
from tensorflow.keras import optimizers
```

```
In [43]: input_shape=(224,224,3)
conv_base = EfficientNetB0(weights="imagenet", include_top=False, input_shape=input_shape)

Downloading data from https://storage.googleapis.com/keras-applications/efficientnetb0_notop.h5
16711680/16705208 [=====] - 2s 0us/step
16719872/16705208 [=====] - 2s 0us/step
```

```
In [44]: labels=os.listdir(r'C:\Users\Aditi\Desktop\Projects\Brain Tumor detection\Training')
print(labels)
```

```
['glioma_tumor', 'meningioma_tumor', 'no_tumor', 'pituitary_tumor']
```

CODE EXAMPLES

Prediction

```
In [67]: import easygui
import imageio

In [68]: name=input("Input patient name ")

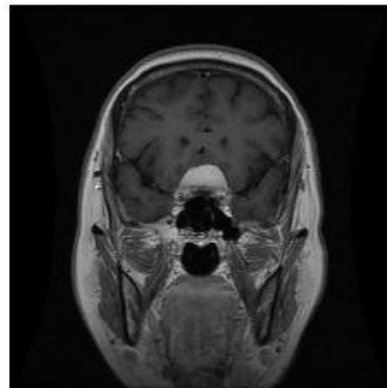
Input patient name Miss Singhania

In [82]: print("Submit your image for diagnosis")
flag=0
while(flag==0):
    ImagePath=easygui.fileopenbox()
    img=cv2.imread(ImagePath)
    if img is None:
        print("Can not find any image. Choose appropriate file")
        continue
    else:
        flag=1

Submit your image for diagnosis
```

In [89]: image

Out[89]:



There is a 96.3% chance that Miss Singhania suffers from Meningioma Tumor.

RETINAL FUNDUS DISEASES

For the detection of diabetic retinopathy, age-related macular degeneration, and glaucoma, single disease-based deep learning algorithms had been developed. In this study, we used a DLM that can detect a variety of common referable fundus diseases and conditions (39 classes).

CODE EXAMPLES:

```
list(labels)
```

```
['Bietti crystalline dystrophy',  
'Blur fundus with suspected PDR',  
'Blur fundus without PDR',  
'BRVO',  
'Chorioretinal atrophy-coloboma',  
'Congenital disc abnormality',  
'Cotton-wool spots',  
'CRVO',  
'CSCR',  
'Disc swelling and elevation',  
'DR1',  
'DR2',  
'DR3',  
'Dragged Disc',  
'ERM',  
'Fibrosis',  
'Fundus neoplasm',  
'Large optic cup',  
'Laser Spots',  
'Maculopathy',  
'Massive hard exudates',  
'MH',  
'Myelinated nerve fiber',  
'Normal',  
'Optic atrophy',  
'Pathological myopia',  
'Peripheral retinal degeneration and break',  
'Possible glaucoma',  
'Preretinal hemorrhage',  
'RAO',  
'Retinitis pigmentosa',  
'Rhegmatogenous RD',  
'Severe hypertensive retinopathy',  
'Silicon oil in eye',  
'Tessellated fundus',  
'Vessel tortuosity',  
'Vitreous particles',  
'VKH disease',  
'Yellow-white spots-flecks']
```

```
In [22]: import easygui  
import imageio
```

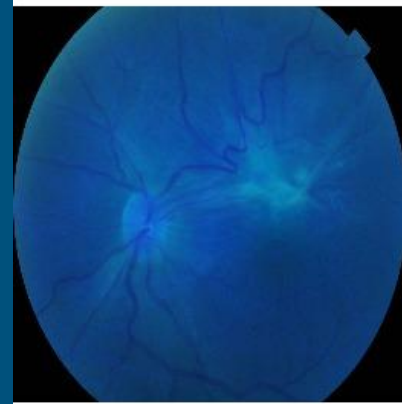
```
In [23]: name=input("Input patient name ")
```

Input patient name Miss. Singhania

```
In [24]: print("Submit your image for diagnosis")  
flag=0  
while(flag==0):  
    ImagePath=easygui.fileopenbox()  
    img=cv2.imread(ImagePath)  
    if img is None:  
        print("Can not find any image. Choose appropriate file")  
        continue  
    else:  
        flag=1
```

Submit your image for diagnosis

image



There is a 69.64% chance that Miss. Singhania suffers from Retinitis pigmentosa

APPLICATIONS AND USE CASES:

- 1.ASSISTED OR AUTOMATED DIAGNOSIS AND PRESCRIPTION:CHATBOTS CAN HELP PATIENTS IN SELF DIAGNOSE OR ASSIST DOCTORS IN DIAGNOSIS.
- 2.SUPPORTS MEDICAL IMAGING ANALYSIS:CLINICIAN REVIEWING IMAGES AND SCANS
- 3.CAN FORECAST RETINAL FUNDUS DISEASE
4. PROVIDES VALUABLE ASSISTANCE TO EMERGENCY FORECAST

IMPLEMENTATION OF APPLICATION

Tech Stack Used

- For Web application -> Flask, JavaScript, HTML, CSS
- For Android Application -> Flutter
- Machine Learning and deep learning



THANK YOU