

## **Brain Tumor Detection From MRI Images With IBM Watson Studio**



# **INDEX**

1. INTRODUCTION
2. LITERATURE SURVEY
3. THEORITICAL ANALYSIS
4. FLOWCHART
5. RESULT
6. ADVANTAGES AND DISADVANTAGES
7. APPLICATIONS
8. CONCLUSION
9. FUTURE SCOPE

# INTRODUCTION TO PROJECT

Computer vision techniques have shown tremendous results in some areas in the medical domain like surgery and therapy of different diseases. Even researchers are trying to experiment with the detection of different diseases like cancer in the lungs and kidneys. Different medical imaging datasets are publicly available today for researchers like Cancer Imaging Archive where we can get data access of large databases free of cost. A brain tumor is one of the problems wherein the brain of a patient's different abnormal cells develops. They are called tumors that can again be divided into different types.

Through this article, we will build a classification model that would take MRI images of the patient and compute if there is a tumor in the brain or not. We will be using Brain MRI Images for Brain Tumor Detection that is publicly available on Kaggle. We will first build the model using simple custom layers convolutional neural networks and then evaluate it. At last, we will compute some prediction by the model and compare the results.

# LITERATURE SURVEY

Today's recent medical imaging research faces the challenge of detecting brain tumor through Magnetic Resonance Images (MRI). Broadly, to produce images of soft tissue of human body, MRI images are used by experts. For brain tumor detection, image segmentation is required. Mechanizing this process is a tricky task because of the high diversity in the appearance of tumor tissues among different patients and in many cases similarity with the usual tissues. Physical segmentation of medical image by the radiologist is a monotonous and prolonged process. MRI is a highly developed medical imaging method providing rich information about the person soft-tissue structure. There are varied brain tumor recognition and segmentation methods to detect and segment a brain tumor from MRI images. This is well thought-out to be one of the most significant but tricky part of the process of detecting brain tumor. A variety of algorithms were developed for segmentation of MRI images by using different tools and methods. Alternatively this paper presents a comprehensive review of the methods and techniques used to detect brain tumor through MRI image.

# THEORITICAL ANALYSIS

Brain tumor identification is a really challenging task in the early stages of life. These days the issue of brain tumor automatic identification is of great interest. A tumor is the unusual growth of the tissues. A brain tumor is a number of unnecessary cells growing in the brain or central spinal canal. It is the unrestrained progress of cancer cells in any portion of the body.

Deep learning techniques can be used in order to detect the brain tumor of a patient using the MRI images of a patient's brain. In this application, we are helping the doctors and patients to classify the type of scan for the specific image given with the help of Neural Networks and store the patient's data.

Following are the steps which are to be completed to complete this project

- Download the dataset.
- Classify the dataset into train and test sets.
- Add the neural network layers.

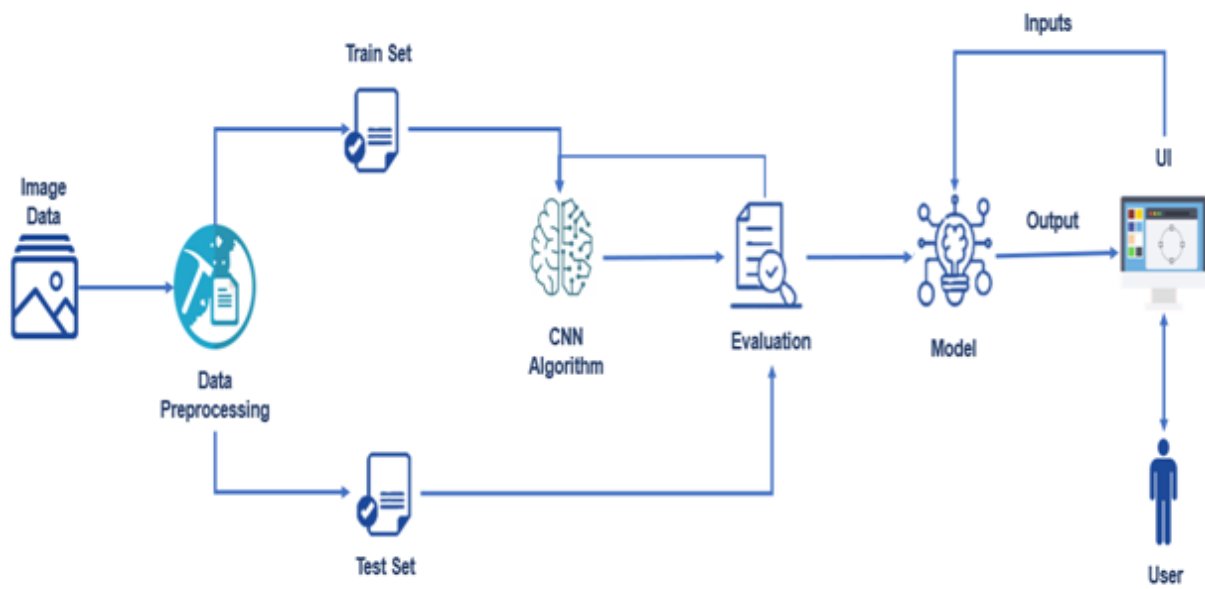
·

Load

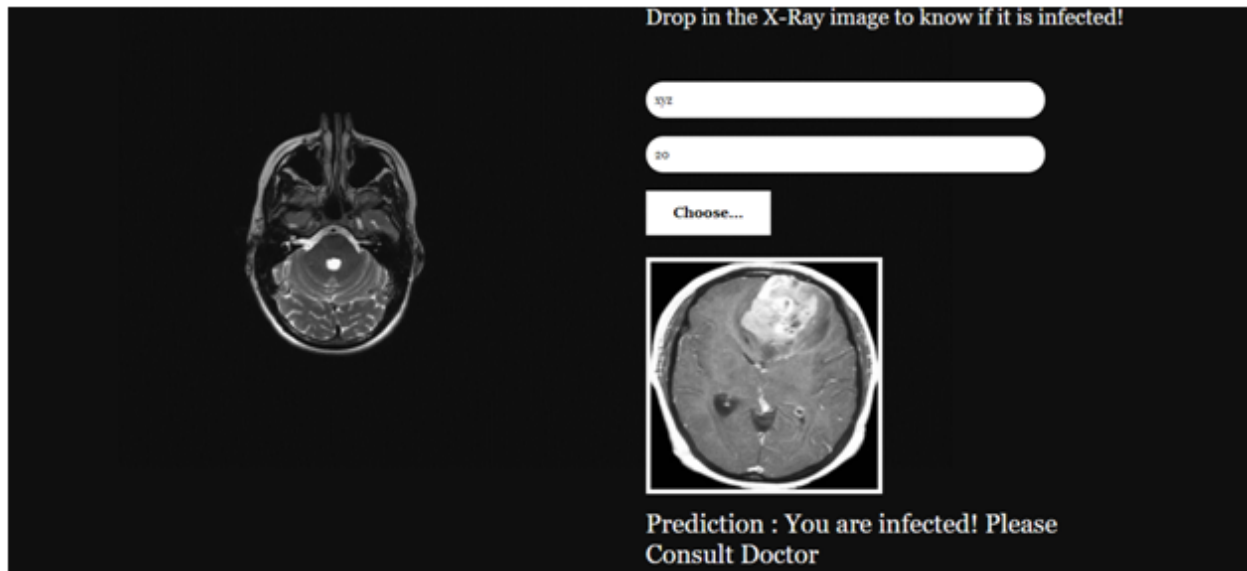
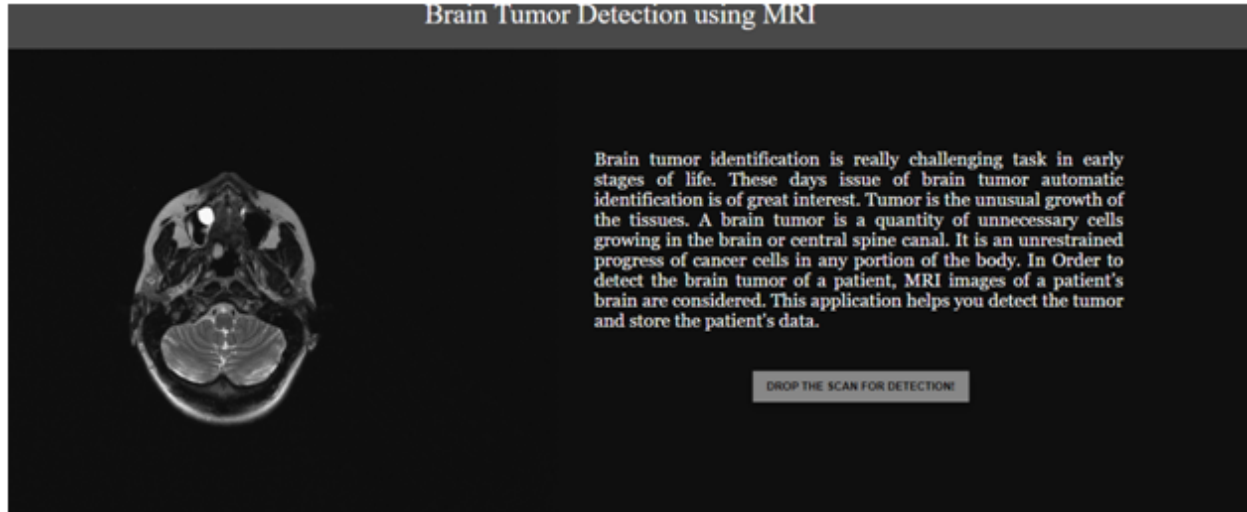
the trained images and fit the model.

- Test the model.
- Save the model and its dependencies.
- Build a Web application using flask that integrates with the model built.

# FLOW CHART



# RESULT



# ADVANTAGES AND DISADVANTAGES

## **Advantages:**

1. Independent of atlas registration
2. Independent of prior anatomical knowledge
3. Independent of bias correlation
4. Using single-spectral MRI
5. This approach does not consider the local tumor properties (gradients), global properties (intensity), contour length, and region length.
6. This approach does not rely on atlas registration and prior anatomical knowledge.

## **Disadvantages:**

1. High computational complexity



# APPLICATIONS

- Brain tumor identification is a really challenging task in the early stages of life.
- These days the issue of brain tumor automatic identification is of great interest.
- Deep learning techniques can be used in order to detect the brain tumor of a patient using the MRI images of a patient's brain.
- In this application, we are helping the doctors and patients to classify the type of scan for the specific image given with the help of Neural Networks and store the patient's data.

## **CONCLUSION AND FUTURE SCOPE**

In this application, we are helping the doctors and patients to classify the type of scan for the specific image given with the help of Neural Networks and store the patient's data. Image Data Generator class is used to load the images with different modifications like considering the zoomed image, flipping the image and rescaling the image to a range of 0 and 1.