Review-2 Presentation on

Brain Tumor Detection

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OUTLINE

Abstract

- Brain tumor is the growth of abnormal cells in brain some of which may leads to cancer..
- The usual method to detect brain tumor is Magnetic Resonance Imaging(MRI) scans.
- From the MRI images information about the abnormal tissue growth in the brain is identified.

Literature Review

- In literature, machine learning, deep learning in particular, has been argued to have the potential of overcoming the challenges associated with the detection and intervention of brain tumor.
- Deep Learning is regarded as one of the best methods in data science and artificial intelligence to train models through data to develop valuable decision-making abilities.

Introduction

- Brain Tumors are complex.
- A brain tumor is a mass of cells that have grown and multiplied uncontrollable. Medical imaging plays a central role in the diagnosis of brain tumors.
- MRI is a technique used in medical imaging which is considered to be the most efficient tool to analyze the internal structures of the body.
- Problem is Brain tumours vary in size, shape,appearances, colour, location and orientation, which is precisely the reason why tumor segmentation is challenging.
- The major drawback of manual detection is that it is time consuming and prone to human errors.

Objective

- To classify MRI as: MRI with tumor or MRI without tumor
- To classify the tumor into one of the three classes.
- To show exact position of tumor in the MRI.
- To provide information on symptoms and treatment.
- To provide information about available doctors.

Problem Statment

- To Detect and Classify Brain Tumor using ANN and CNN as an asset of Deep Learning an to examine change of tumor position.
- In the medical field, Tumor is detected by Doctors by referring the MRI images which is very time consuming. Therefore, to overcome this problem, an alternative way is to design the system that will automatically identify the presence of Tumor in MRI images using Deep learning technique and also provide Faster and Accurate solution.

Implementation

- Images collection as Tensorflow TF:- In this process the cateogorical images of the leaf which include the healthy images , T1 weight images, T2 images can be inserted from the local memory to the tensorflow modules in the form of batches.

- Preprocessing:- Images come in different shapes and sizes. They also come through different sources. For example, some images are what we call "natural images", which means they are taken in color, in the real world. For example: A picture of a flower is a natural image.

- Segmentation:- Segmentation: Region growing is the simple region-based image segmentation technique. It is also classified as a pixel based image segmentation technique since it is involve the selection of initial seed points.

Implementation

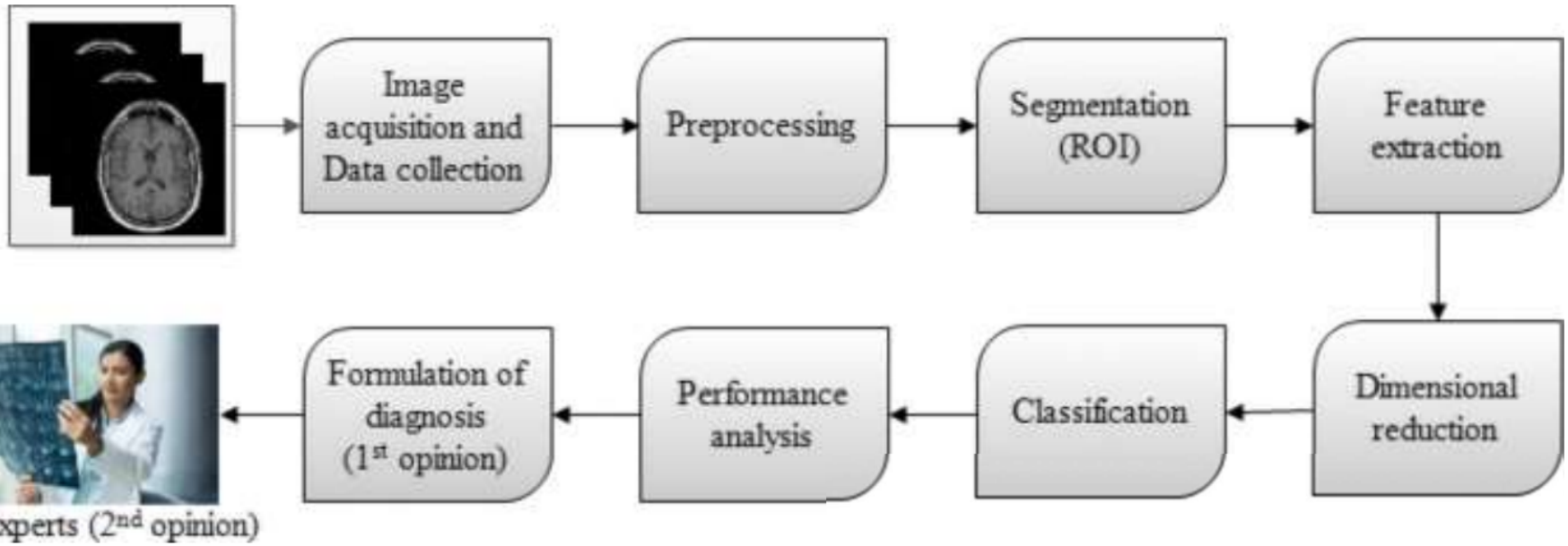
- Feature Extraction:- We apply machine learning to analyze a growing volume of data, which is becoming increasingly complicated.
- Convolutional Neural Network (CNN):- convolutional layers store the output of the kernels from the previous layer which consists of weights and biases to be learned.
- Dimension Reduction:- The availability of high-dimensional medical image data during the identification procedure can place a heavy computational burden and require a suitable preprocessing step for lower-dimensional representation.

Implementation

- Classification:- Classification is the final step of the image analysis method that involves 14 sorting feature data in an image into separate classes.

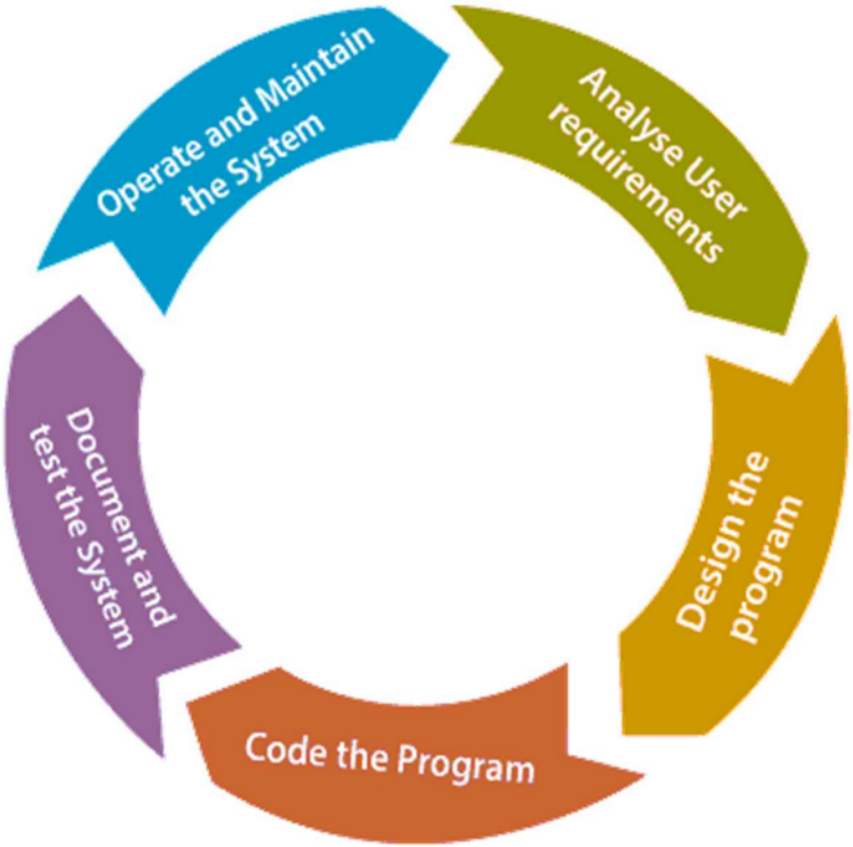
- Performance Analysis:- It needed to look into the most recent cutting-edge studies on brain tumor identification and tracking. This study evaluated recent papers published in the last decade or so that focused on the identification and categorization/classification of brain tumors employing CNN.

Working Diagram

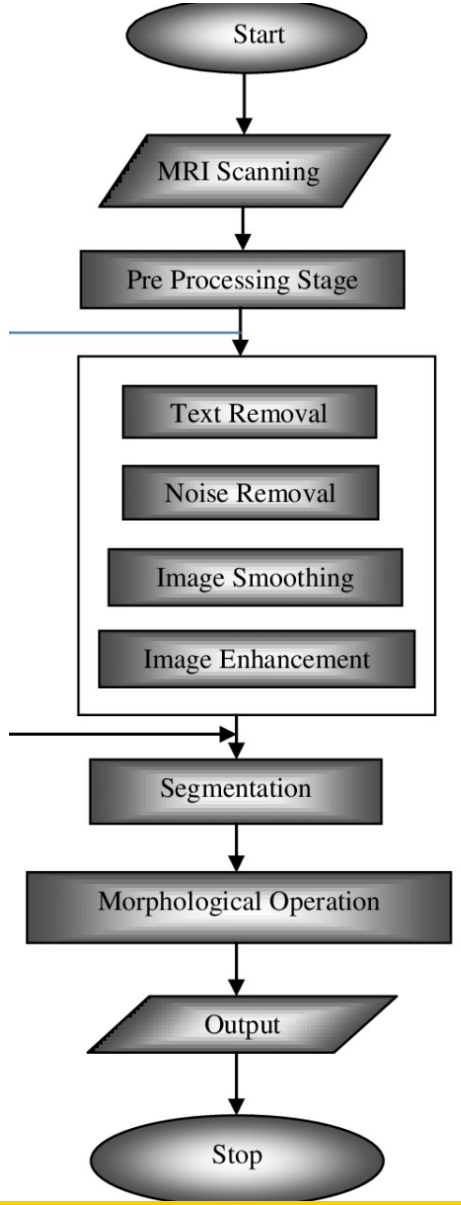


SDLC

- Agile Model



Activity Diagram



Requirment H/W And S/W

Hardware

- The minimum hardware requirement of the Application is a 500 Megahertz CPU and 500 megabytes of RAM.
- Also, because it uses the Deep Learning Concept where we use the computational power so we need a Compatible graphic card at least NVIDIA 1650. for the bigger Networks, additional memory is required.
- Processor: Intel core i5 or above.
- 64-bit, quad-core, 2.5 GHz minimum per core
- Ram: 4 GB or more
- Hard disk: 10 GB of available space or more.
- Display: Dual XGA (1024 x 768) or higher resolution monitors
- Operating system: Windows

Software

- The application required python and Scikit-learn modules to be installed on the System, more specifically Python 3.6 version.
- The project can be connected with the Deep Learning APIs and the API for fetching the real time Photo.
- Pandas
- Numpy
- Tensorflow
- Python
- Jupyter notebook

Conclusion

- Medical image segmentation is a challenging issue due to the complexity of the images, as well as the lack of anatomical models that fully capture the potential deformations in each structure.
- This proposed method works very effectively to the initial cluster size and cluster centers.
- The segmentation is done by using BWT techniques whose accuracy and computation speed are less.
- This work recommends a system that requires negligible human intrusion to partition the brain tissue.
- The main aim of this recommended system is to aid the human experts or neurosurgeons in identifying the patients with minimal time.

Thank You