

L^AT_EX Brain Tumor Type Classification Project Documentaiton

Abstract

This project Uses a Dataset of images showing different types of brain tumor as a training set for the sake of classifying futrue samples.

3. References

The whole project was uploaded on Github: <https://github.com/Kamzoki/NNProject> You can also find the project on the same DVD which this document on, along with all the assets.

1. Introduction

The images in the dataset show exactly three types of brain tumor: Meningioma, Glioma, Pituitary tumor. The dataset contains assigned labels to each of these types: 0, 1, 2 respectively.

1.1. Programming Language

Python

1.2. Mapping

Mapping the dataset images was carried out by saving their paths along with their assigned labels to a text file called Map.txt

1.3. Mathematics

Mathmatics functions used in the project are conv2d,maxpool2d,localresponesenormalization. These functitons are a part of tflearn library.

2. Code Details

First, Building classifier:-

Loading data using imagepreloader imported from tflearn.datautils.

Preprocessing:

the dataset is reshaped in order to be fed to the CNN classifier.

Building a deep neural network:-

We are building a 5-layers neural network using TFLearn. We need to specify the shape of our input data. In our case, each sample has a total of 784 features and we will process samples per batch to save memory, so our data input shape is [None, 28,28,1] ('None' stands for an unknown dimension, so we can change the total number of samples that are processed in a batch).

Then, the classifier is trained using the dataset and tested.