**Brain Tumor Classification using MRI Reports**

This repository contains the code, report, and session logbook for a machine learning project focused on brain tumor classification using Convolutional Neural Networks (CNNs) on MRI scans.

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**Introduction**

Brain tumor classification is a crucial task in medical imaging. This project utilizes a Convolutional Neural Network (CNN) to classify brain tumors from MRI scans. The goal is to build an accurate model that can assist in early diagnosis and treatment planning.

**Files in this Repository**

**1. Code File**

* **File Name:** brain\_tumor\_classification.py (or .ipynb if it's a notebook)
* **Description:** This file contains the implementation of the CNN model used for brain tumor classification. It includes the necessary pre-processing steps, model architecture, training process, and evaluation metrics. The model is trained on MRI images and aims to classify tumors into distinct categories (e.g., benign, malignant).

**2. Project Report**

* **File Name:** Project Report Ahsan Farooq 22080535.docx
* **Description:** This PDF document provides a comprehensive overview of the project. It includes background information, problem statement, dataset details, model architecture, experimental setup, results, and conclusions. The report also discusses the limitations of the current approach and suggests potential improvements.

**3. Logbook**

* **File Name:** Project Logbook Ahsan Farooq 22080535.doc
* **Description:** The logbook documents the progress of the project, including details of the sessions attended with the supervisor. It also includes a section about the creation and management of this GitHub repository, highlighting key decisions and changes made during the project.

**Usage**

To use the code file for brain tumor classification:

1. Clone this repository to your local machine:

Git clone https://github.com/AhsanFarooq00/Innovative\_Deep\_Learning\_Models\_for\_Brain\_Tumor\_Diagnosis-.git

1. Navigate to the project directory:

cd https://github.com/AhsanFarooq00/Innovative\_Deep\_Learning\_Models\_for\_Brain\_Tumor\_Diagnosis-.git

1. Ensure all dependencies are installed (see [Installation](#installation)).
2. Run the code file to train the model and evaluate its performance.

**Installation**

To run the code, you need to install the required Python libraries. You can do this by running:

pip install -r requirements.txt

Ensure you have Python 3.x installed, along with libraries like TensorFlow/Keras, NumPy, Matplotlib, etc.

**Results**

The CNN model achieves an accuracy of 94% on the test dataset. For more detailed results, please refer to the [Project Report](#2-project-report).

**References**

Please refer to the report for a list of references and additional reading materials related to brain tumor classification and CNNs.