Project Journal

Mental Health Analysis using Machine Learning

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This is the project journal that has been maintained throughout the course of the project. It is divided into two categories: Tasks and Timeline.

Tasks

1. **Dataset Selection:** Brain Tumor dataset was selected from Kaggle and stored in Google Drive. The dataset was resized to 244*244 pixels for processing.
2. **Data Preprocessing:** Preprocessed for ResNet50 model and visualized model accuracy and model loss.
3. **Model Architecture:** Loaded ResNet50 model on ImageNet without the top layer. Made a custom classification with dense layers and a sigmoid activation function for binary classification. Compiled the model using Adam optimizer and binary cross-entropy loss.
4. **Model Training:** Trained 5 epochs after splitting the dataset for 80% for training and 20% validation. By the 5th epoch had an accuracy of 94% and validation of 84%.
5. **Performance Analysis:** Plotted graphs of model training and loss for accurate representation of performance.
6. **Prediction:** Used two test images and successfully predicted their classes using the trained model. Resulting in Image 1 having No brain tumor and a probability of 0.23 and Image 2 having a Brain tumor with a probability of 0.98.
7. **Reporting:** After finishing the implementation compiled all the results into structured report.

Timeline

12th December 2024: Task 1 (Data Selection)
17th December 2024: Task 2 (Data Preprocessing and Visualization)
18th December 2024: Task 3 (Model Architecture and Compilation)
24th December 2024: Task 4 (Model Training)
26th December 2024: Task 5 (Performance Analysis)
29th December 2024: Task 6 (Prediction)
2nd January 5, 2025: Task 7 (Reporting)