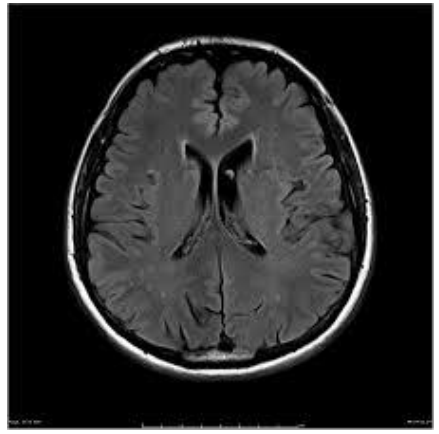
Brain Tumor Detection from MRI using CNN

Group 18

- **Motivation**:
  - 18,600 adults a year.
  - 700,000 people in US.
  - Automated model speeds up the process.
- **Problem Statement**:
  - The project aims at developing a model that can detect if a given brain MRI contains a tumor in it.
- **Approach**:
  - Gathering appropriate data(images) for the project.
  - Image classification using Convolutional Neural Network.
- **Data Set**:
  - A total of 3087 images are considered and classified for the model.



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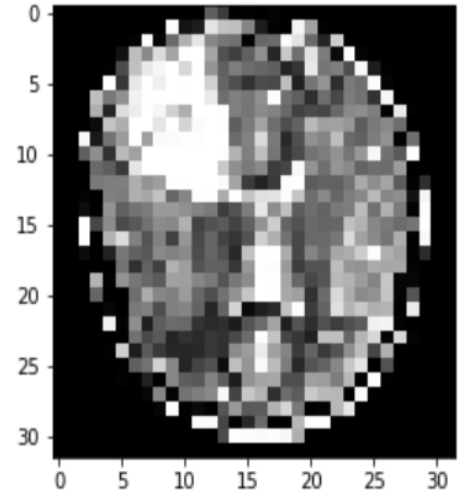
Data Preprocessing

- Resizing
- Creating target variable arrays



Splitting data into train and test set

- 70 – 30 split was used

Building the model

- CNN model – keras and tensorflow

Evaluating the model on the test set

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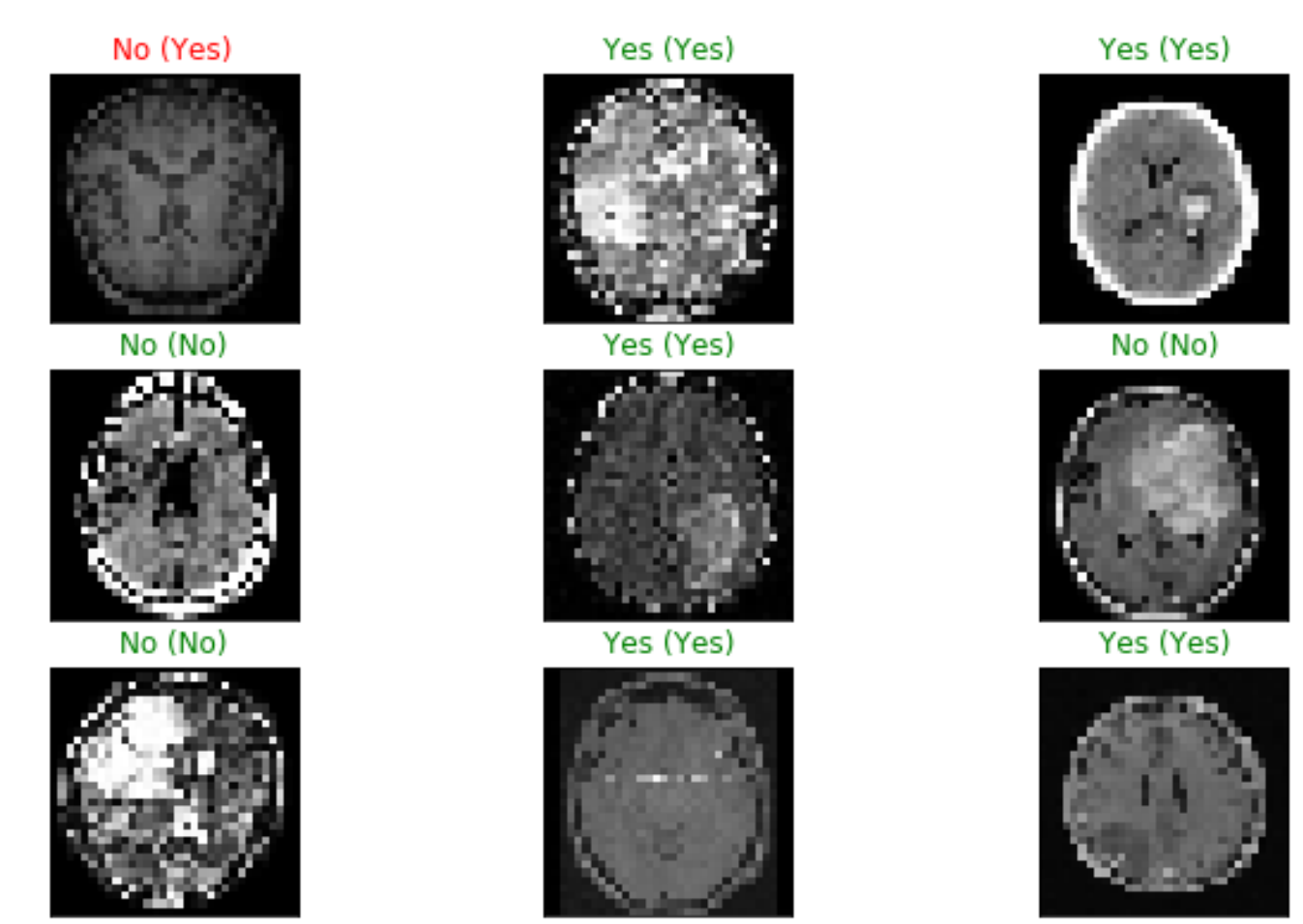
Results: Prediction(Actual)



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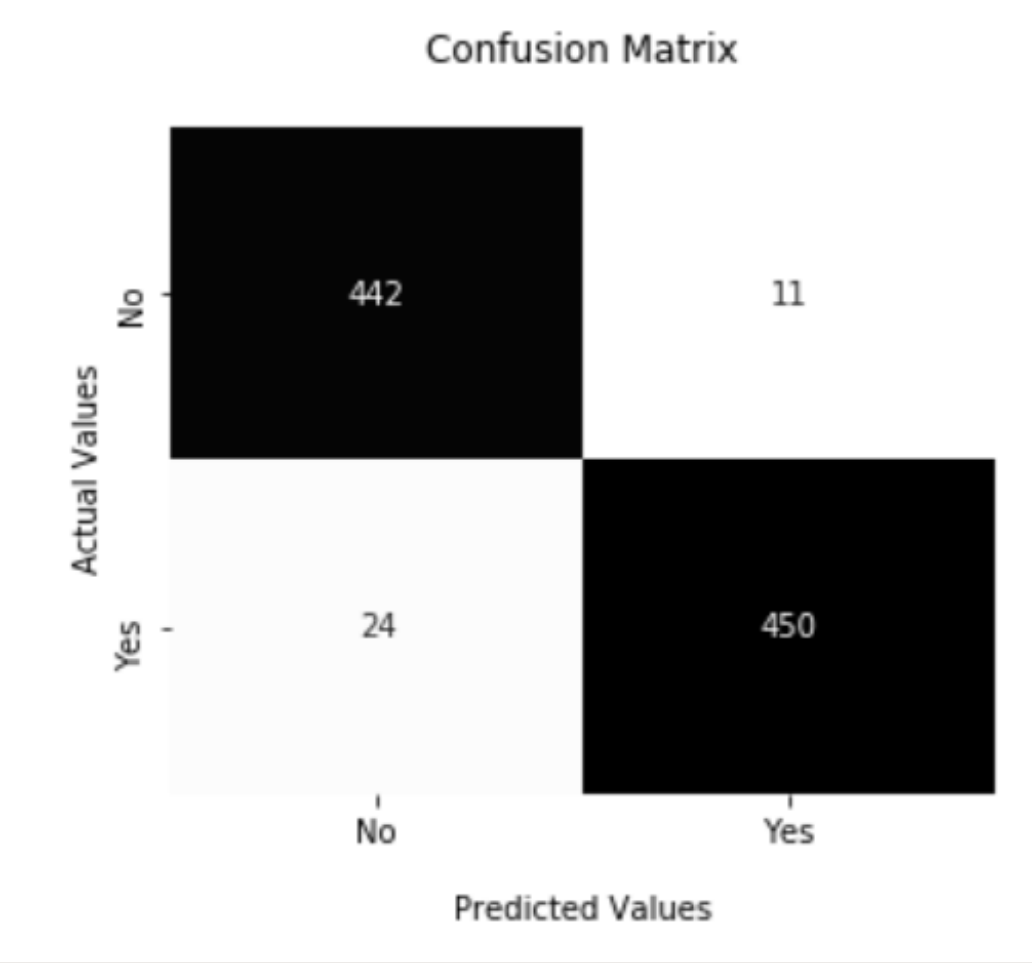

Evaluation of the model:

- Accuracy of the model = 96.22%
- Recall = 97.6%
- Precision = 94.9%
- F1 Score = 96.26%

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Broader impact of the research:

- The segmented images can be further processed and be used to predict the clinical disorder, survival and response to any therapy given.
- This method has a role in the segmentation of glioblastoma and lower grade astrocytomas - types of brain tumors.
- The future performance of CNN-based brain tumor detection can be enhanced using deep networks and other categories in CNN.
- Other techniques such as feature maps and augmentation techniques can also be used and worked properly to get more accuracy for the trained model.