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Verified

Topic - 3

Economical impact on Advance healthcare A Comparative analysis of Brain tumor Detection using CNNBasic and VGG1 - 19

Aim:-

Compare and assess the effectiveness of brain tumor detection using Visual Geometry Group and convolutional neural network (CNN) aiming to inform the selection of optimal methodologies of enhanced health care outcome.

Introduction:-

In today rapidly evolving world, the prediction and enhancement of air quality hold paramount importance across diverse geographical regions. This research focuses on assessing the best algorithm for air quality prediction.

Comparing the effect of Random forest and Support Vector Regression model. The given, assessed and forecasting of air quality underscores the robust technique significant in the atmospheric quality assessment on manual data collection.

Related works:-

An automatic classification of Brain tumor through MRI using Support vector machine.

Published: 03 September 2016

Performance analysis of Brain Tumor image classification using CNN and SVM

published: 2020

A hybrid model of fast R-CNN and SVM for tumor detection and classification of MRI brain image

Published: 3. July 2020.

Materials:

Data:

Specify the dataset used in the study for the brain tumor detection consist of the detailed MRI image of the human brain. No of group: 2. Sample size per sample: 980 Total sample size: 4960

Software and Tools.

Using python programming language. The following library framework were employed.

- Tensorflow is used for the Image recognition.
- Keras is used for the implementation of neural network
- CV2 is used for the processing the Image data.
- Sklearn is used for the machine learning model.

Methods:-

Visual Geometry Group (VGG) is a supervised machine learning algorithm for classifying and regression. It aims to find a hyperplane that maximally separates different classes in the input data. The hyperplane is defined by weights and a bias learned and the algorithm seeks to maximize the margin, the distance between the hyperplane and the nearest data points of each class. VGG can use a hard limit for complex data relationship and allows for a soft margin in case of non-separable data. The optimisation process involves finding optimal weights and bias through quadratic programming. VGG is effective in high dimensional spaces and widely applied in various domains.



Result and Discussion:-

The paper uses Support Vector machine (SVM) and Convolutional neural network system demonstrate advancements in brain tumor detections. The VGG-19 model achieves an accuracy of 92.3%.

This underscores the precision of both VGG-19 and CNN in detecting brain tumor across diverse areas. The comparative exploration of RER and VGG-19 model provides valuable insights into efficacy of machine learning techniques for Brain Tumor prediction contributing to advancement in environmental monitoring. In the comparison of the model CNN Basic 3.2 and VGG-19 Fig 3.1, the accuracy of the GNN is higher than the VGG-19 of Conclusion 92.63.

As medical and evolving information demand real-time results of VGG-19 as an economical advance healthcare solution. Future research direction involves exploring diverse data analysis methodologies to formulate models adapt to accommodate the dynamic and Brain Tumor Images. thereby posing the way of enhanced health care economic impact.

MODEL : Visual Geometry Group (VGG-19)

ACCURACY : 90.62%

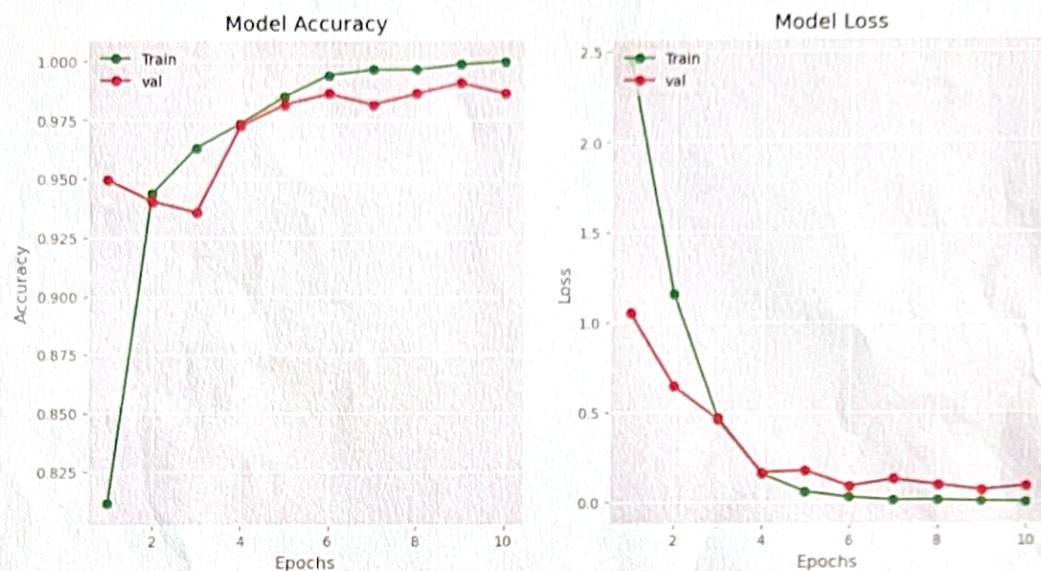


Fig :- 3.1 - shows the accuracy for VGG-19 over CNN

MODEL : Convolutional neural network

ACCURACY : 92.63%

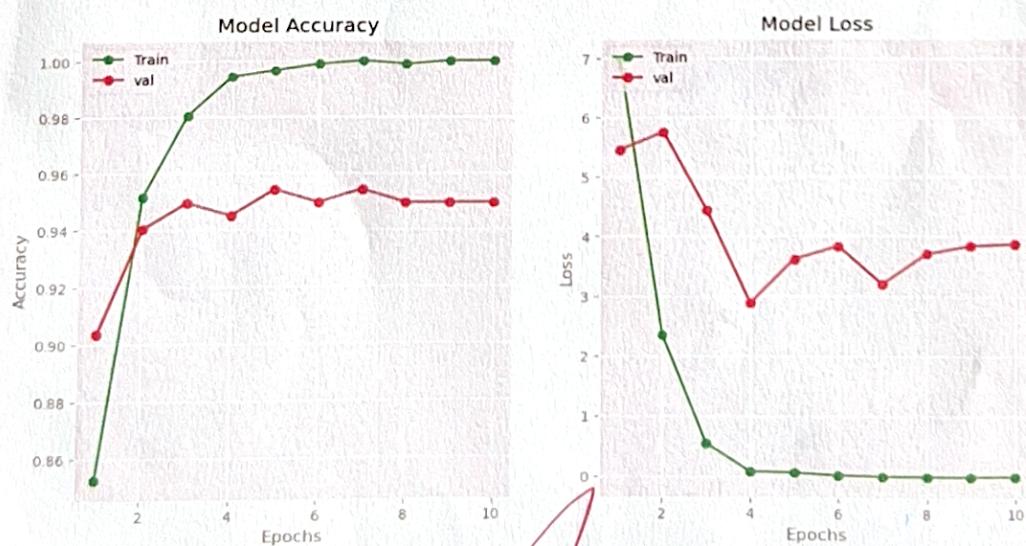


Fig 3.2 - show the accuracy for CNN over VGG-19