Age Detection Using Transfer Learning From Scratch

Age detection is applied in various domain like psychology,marketing domain,advertising .In this project we have taken a pretrained model known as ResNet50 from keras application .

Dataset

- We have taken this dataset from Kaggle . Here is the link to the dataset https://www.kaggle.com/datasets/trainingdatapro/age-detection-human-faces-18-60-years
- This dataset contain images of people from various age groups ranging from18 to 60 years.
- This dataset consists of two folders one is train folder and the other is test folder.
- Each folder consists of subfolders which are labelled according to different age groups.
- There are total five categories of age groups **18-20, 21-30, 31-40, 41-50, 51-60.**
- The images in this dataset is mostly selfies .

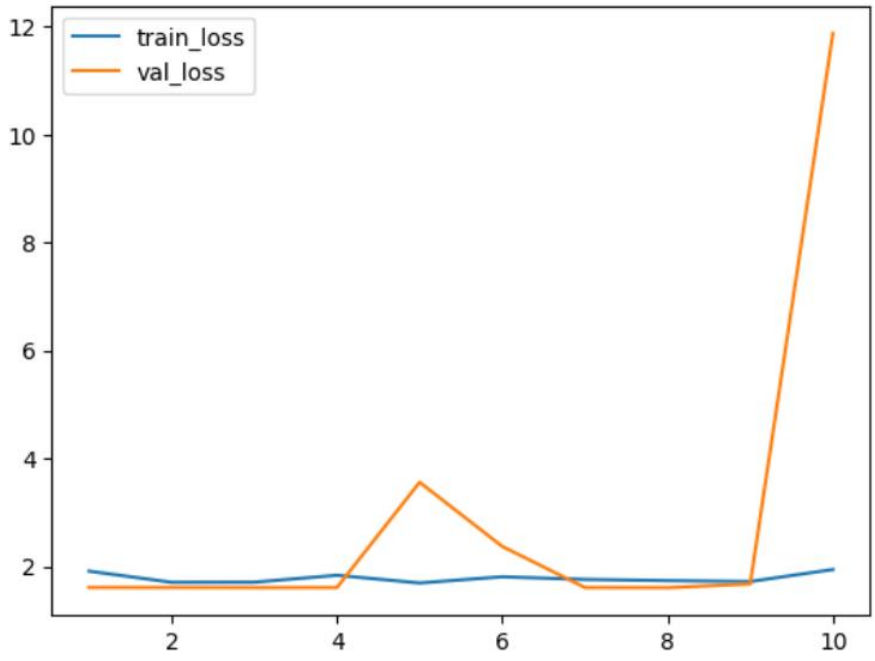
Neural Network Architecture

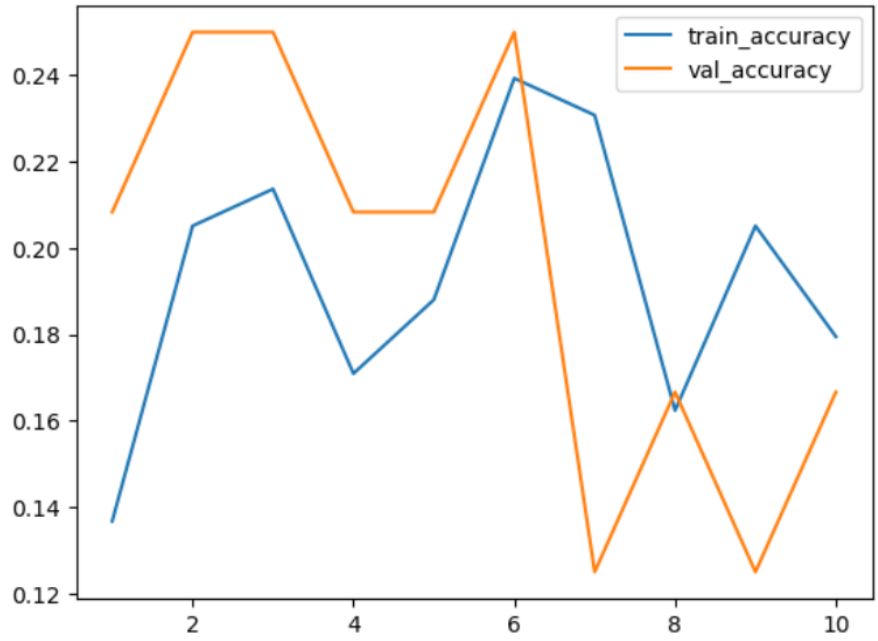
- This ResNet50 pretrained model has been trained on Imagenet Data.Since our data is small and not similar to ImageNet dataset we are going to freeze only one convolutional block which means we are initializing the kernels in the first block with the pretrained model weights.
- In total there are 5 blocks which consists of 175 layers.These layers include batch normalization,convolution,maxpooling layers.
- We have added our own ANN layers to this model.
- The first dense layer consist of 500 neurons with activation as relu.
- The second dense layer contains 200 neurons with activation as relu.
- The third dense layer contains 100 neurons with activation as relu.
- The final output layer consist of 5 neurons and softmax activation.

Compilation: we have used sparse categorical cross entropy as loss and adam as optimizer
Early stop: early stopped is applied here to reduce the chance of overfitting .

Loss And Accuracy Plots

Here loss and accuracy graphs are shown with respect to the epochs in training time.





Model Evaluation

The accuracy score of the model is 24% and the confusion matrix display is shown below.