CMPSC 497 Final Project - Emotion Recognition

Team members and contribution:

Matthew Li: wrote python code to infer results and process resulting data into usable format
Harieasswar Lakshmidevi: collected data and wrote python code to clean data for easier inference

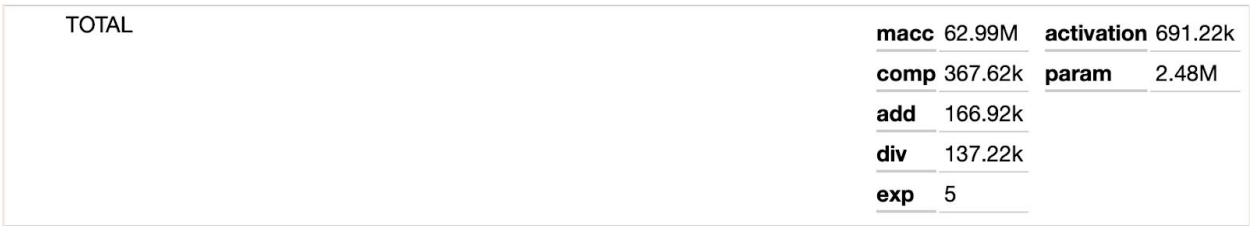
Model Information:

Model Used: **emotion-recognition-retail-0003**

Classes: **Neutral, Happy, Sad, Surprise, Anger**

Publicly Provided Accuracy: **70.20%**

Compute Requirements:



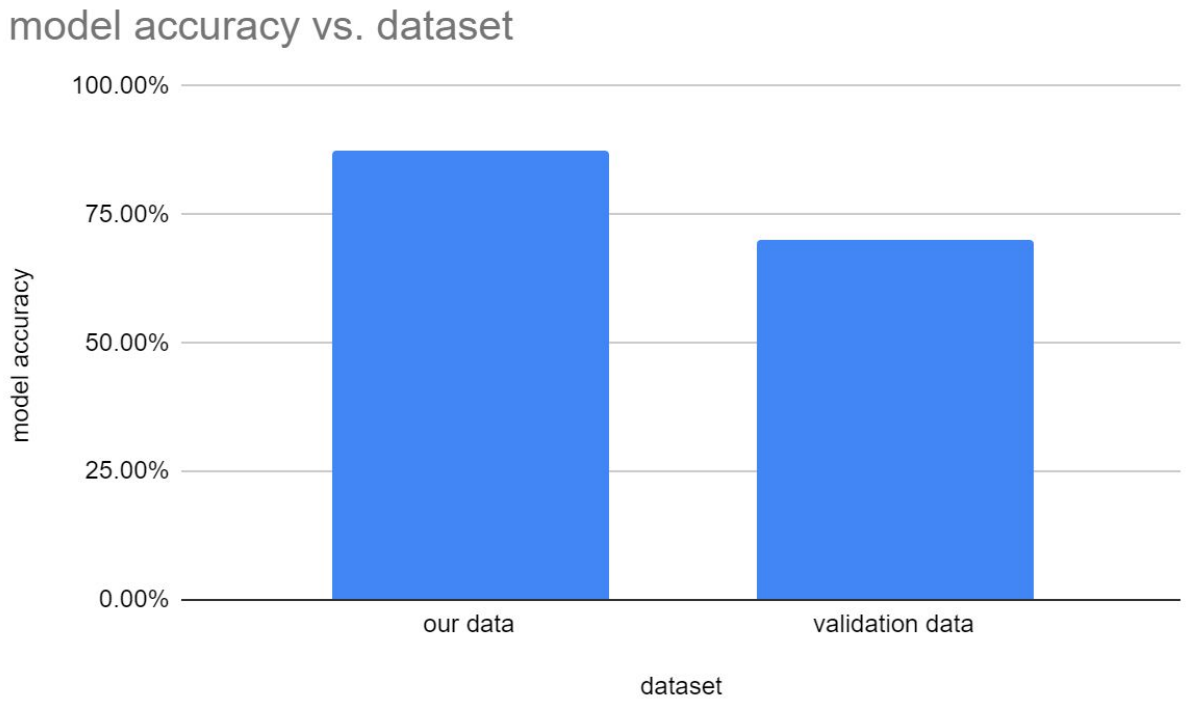
Strengths and weaknesses:

Most of the data collected for “happy”, “sad”, “anger” and “surprise” classes are grayscale images and we observed relatively higher accuracy for such data. We noticed that the confidence for grayscale images is EXTREMELY high for when the model predicts correctly. The model seems to be performing much better on grayscale images, perhaps because the feature maps for grayscale images are much more straightforward and easy for the model to identify.

This pattern in performance may also be due to the fact that the model is worse at identifying neutral expressions, since neutral expressions can vary greatly from person to person. Another observation made here was that some of the neutral expression test data differed the max accuracy by a very low margin. The whole anomaly with the neutral image is due to the fact that each test image chosen was with different size(relatively bigger than grayscale) , aspect ratio, color scale and when such bigger size image sizes are reduced to 64*64, the prominent features gets squashed and the model fails to capture the essence of the original picture.

We also think that the reason of such a spike in accuracy for “happy”, “sad”, “anger” and “surprise” classes is that the size of the image were 48*48 which were upscaled using bicubic upsampling. This may have made certain features more prominent, enabling the model to capture the essential features which results in an accuracy spike.

Our Accuracy:



Note:
The data folder contains images more than we need, perhaps for future use, so we only chose a subsection (randomly) of 125 images from various classes.