Facial Expression Recognition
Group 21

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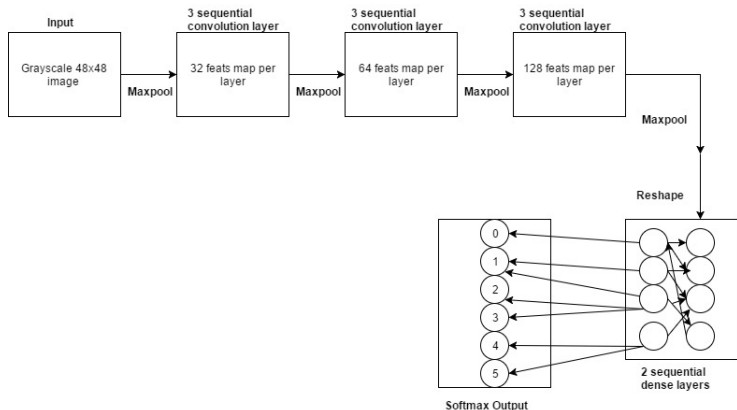**May 11,2017**

Model Explanation

Figure: Facial Emotion Recognition CNN Architecture

Dataset

The dataset comprises a total of 35,887 images of which 28,709 images are traning data, 3509 as test data and 3,589 as cross validation data.

3995	Angry
436	Disguist
4097	Fear
7215	Happy
4830	Sad
3171	Surprise
4965	Neutral

Results

Neutral · Fear · Surprise · Fear · Happy

Figure: Original Image

Figure: Detection

Results

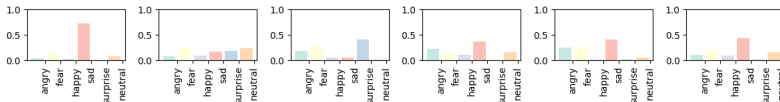

```
[[   2.    6.    3.    3.    3.    5.]
 [   1.    5.    0.    1.   10.    0.]
 [  14.    9.   16.    5.    6.   11.]
 [  70.   84.  104.   75.   36.   69.]
 [   2.    0.    1.    1.   13.    3.]
 [   5.    6.    6.    4.   12.    8.]]
19.8333333333
```

Figure: 5 epoch batch size 256

Figure: Confusion Matrix

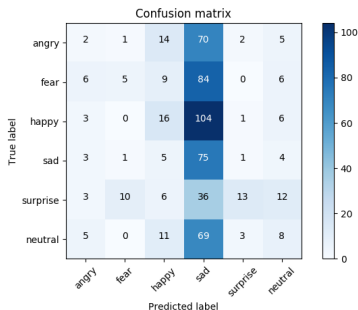# Results

```
[[  80.    2.    1.    1.    0.    4.]
 [   3.  100.    2.    6.    1.    5.]
 [   2.    1.  121.    2.    2.    5.]
 [   3.    4.    2.   74.    0.    3.]
 [   2.    2.    0.    1.   75.    1.]
 [   4.    1.    4.    5.    2.   78.]]
88.0
```
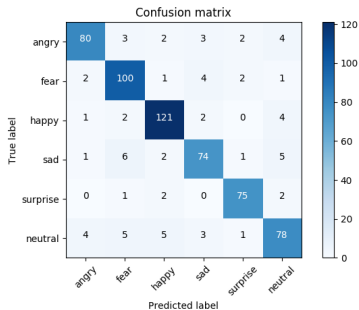
Figure: epoch 128 and batch size 100

Figure: Confusion Matix

Refrences

- Lawrence,Steve,etal.Facerecognition: Aconvolutionalneural-networkapproach. IEEEtransactionsonneuralnetworks8.1(1997):98-113.
- Raghuvanshi,A.,Choksi,V. FacialExpressionRecognitionwithConvolutionalNeuralNetworks
- https://github.com/JostineHo/mememoji
- https://www.tensorow.org/getstarted/mnist/pros
- https://www.kaggle.com/c/ challenges-in-representationlearning-facial-expression-re