A real-time system for emotion detection

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Task decription

Develop a real-time emotion detector using:

- A Convolutional Neural Network (CNN)
- FER-2013 dataset

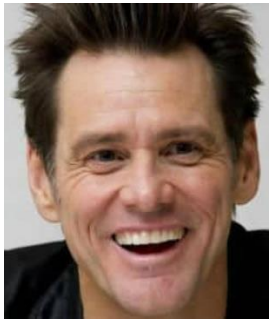
FER-2013 dataset

A dataset composed by:

- 35888 greyscale images with shape of 40x40
- Each image has an associated emotion

Our objective

Input

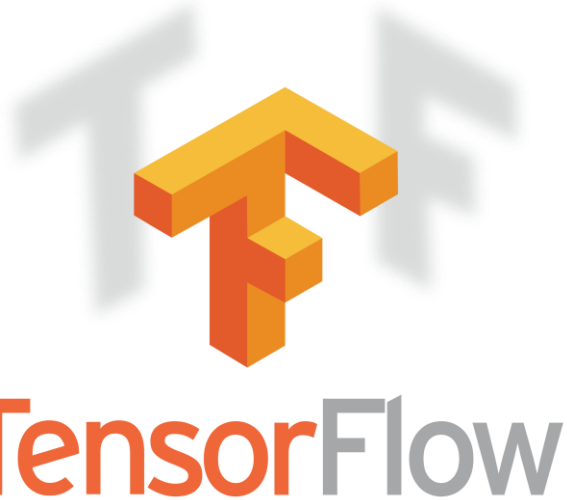


CNN

Probabilities

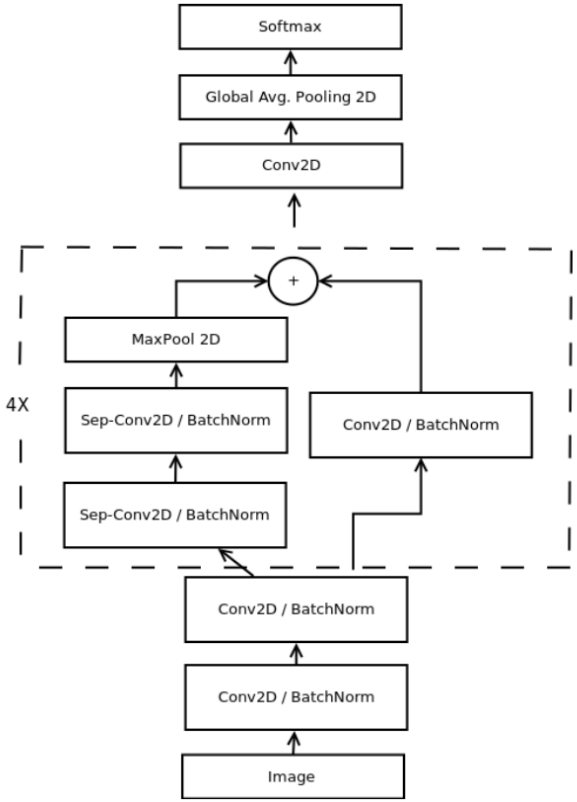
TensorFlow

- An open source machine learning library
- Developed by Google
- The most used nowadays
- It guarantees a very efficient computation



The CNN (mini-Xception)

- Each convolutional layer has been applied:
  - RELU
  - Batch normalization
- 60000 parameters

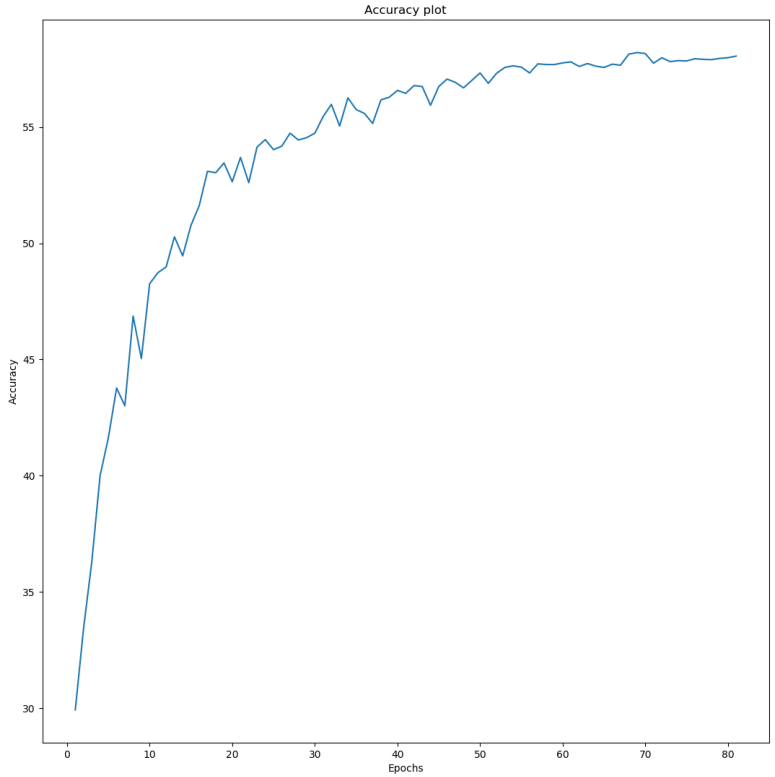


Training phase

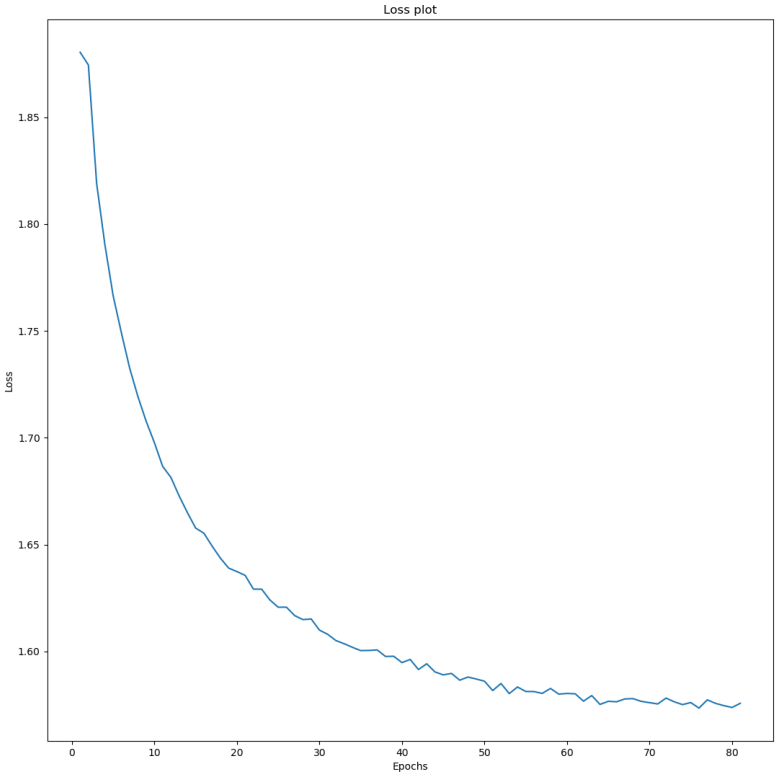
We trained the mini-Xception neural convolutional network with:

- Batch size=32 (32 images per step)
- Adam optimizer
- Learning rate = 0,001
- Exponential decay = 0,95
- Data augmentation techniques

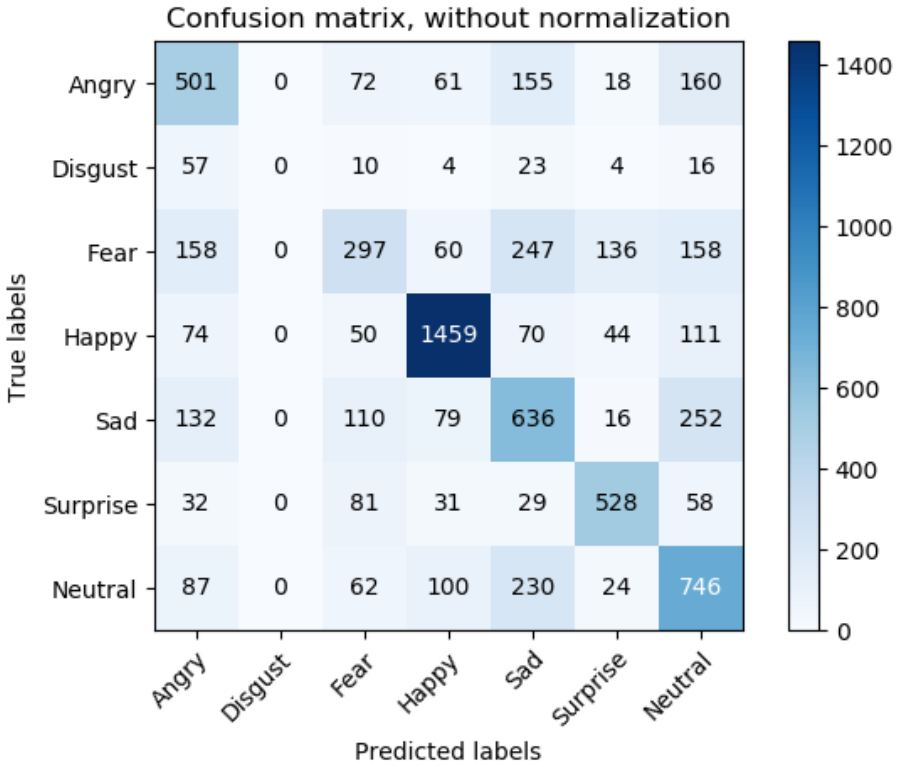
Accuracy


Accuracy plot
Accuracy
Epochs
30
35
40
45
50
55
0
10
20
30
40
50
60
70
80

Loss


Loss plot
Loss
Epochs
1.85
1.80
1.75
1.70
1.65
1.60
0
10
20
30
40
50
60
70
80

Confusion matrix



THANKS!

Stay tuned for the live demo!