Emotion Recognition

Mirko Džaja, Toma Puljak, Dino Nazlić, Tonina Tičinović, Andrea Rakocija

Use cases

- Customer service
- Education
- Healthcare
- Workplace
- Social media

Detecting emotions using CNNs

Input: 48x48 gray image with a face expressing one of 7 emotions (Angry, Disgust, Fear, Happy, Sad, Surprise, Neutral)

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```
model = Sequential()
model.add(Conv2D(32, kernel_size=(3, 3), input_shape=(48, 48, 1), activation="relu"))
model.add(Conv2D(64, kernel_size=(3, 3), activation="relu"))
model.add(MaxPool2D(pool_size=(2, 2)))
model.add(Dropout(0.25))
model.add(Flatten())
model.add(Dense(128, activation="relu"))
model.add(Dropout(0.5))
model.add(Dense(7, activation="softmax"))
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Output: Emotion prediction and a confidence score

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- Faces already centered
- Training set: 28,709 examples
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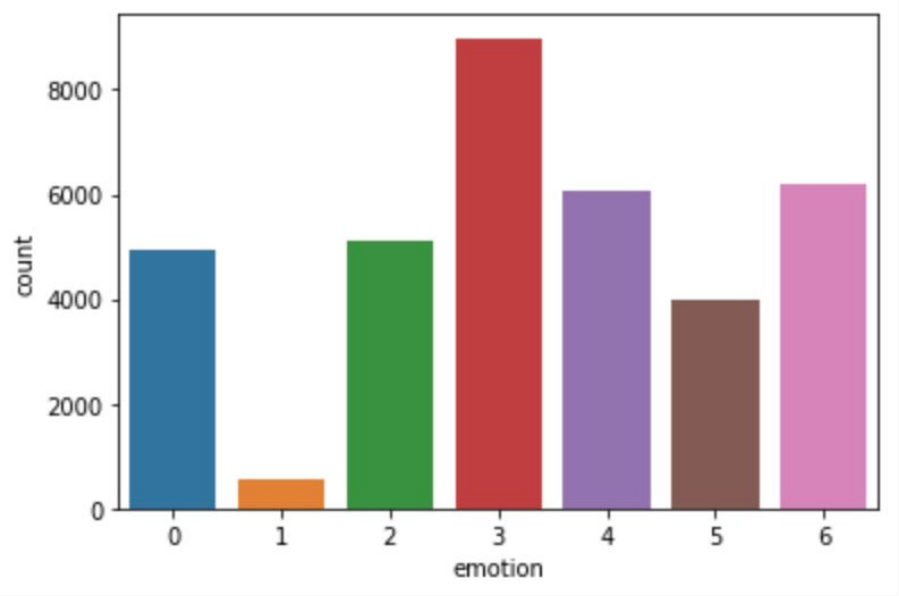

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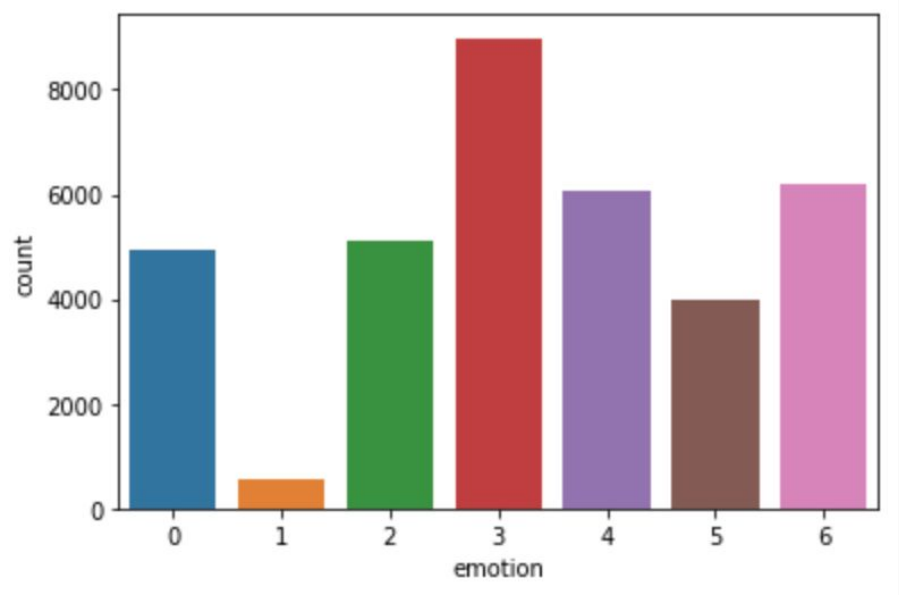
- The majority of images represent Happy, Sad and Neutral expressions



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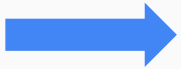

Model

Detecting emotions using CNNs

Model

Emotion: Sad
Confidence: 79.4%

Demo

Results

- 30 epochs
- Test accuracy: 83.34%
- Validation accuracy: 54.03%

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- 30 epochs
- Test accuracy: 83.34%
- Validation accuracy: 54.03%

- Due to the class imbalance in the training data, it was proven difficult to obtain higher accuracies
- If we were to only detect Happy, Sad and Neutral emotions, the accuracies easily surpass 80%

Thank you!

Mirko Džaja, Toma Puljak, Dino Nazlić, Tonina Tičinović, Andrea Rakocija