Artificial Intelligence

Emotion recognition with Convolutional neural networks

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1 Overview

This project will show the process of building a Convolutional neural network to recognize emotions on humans faces. This type of application can be use full and be applied in various system such as security cameras.
As we know nonverbal signals sometimes say more then words.

2 Introduction

3 Convolutional Neural Networks

4 Dataset description

Data that we got is in one *.csv file with two columns:

- number of emotion
  in rage 0 - 6:
  - 0 - angry
  - 1 - disgust
  - 2 - fear
  - 3 - happy
  - 4 - sad
  - 5 - surprise
  - 6 - neutral
- string of pixels
  Pixels are in one long string (2304 of them), they are in gray scale 0 - 255.
  We need to preprocess them into array of 48x48x1 that will could be reorganised as an picture also we will change to rage to 0 - 1 scale - by dividing via 255

```
import pandas as pd
import numpy as np

width, height = 48, 48

def resizeImages(x):
    x = x.astype('float32')
    x = x / 255.0
    return x

def loadData():
    print("Data loading START")
    rawData = pd.read_csv("../data/data.csv")
    pixels = rawData['pixels'].tolist()
    images = []
    for each in pixels:
        image = [int(pixel) for pixel in each.split()]
        image = np.asarray(image).reshape(width, height)
        images.append(image.astype('float32'))
    images = np.asarray(images)
    images = np.expand_dims(images, -1)
    images = np.repeat(images, 3, axis=3)
    emotions = pd.get_dummies(rawData['emotion'])
    images = resizeImages(images)
    print("Data loading DONE")
    return images, emotions
```

5 Model builling

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