Kids Emotions Detection

Team

- Tigau-Almasan Alexandra (258/2)
- Gorgos Andreea (258/1)
- Corman Robert (258/1)

Data

- https://www.childstudycenter-rutgers.com/the-child-affective-facial-expression-se

Problem description

Because we want to know which was the kids emotion when they were trying to use technology/applications, based on photos took while they were playing with the app we are trying to discover their emotions. This emotions are identified in order to have an objective way of analysing their emotions while interacting with the system.

Related work and useful tools

- THE BEST OF 2019 - https://azure.microsoft.com/en-us/services/cognitive-services/face/
  - dataset: https://megapixels.cc/datasets/msceleb/
  - results: AFEW - 45%; SAVEE - 56%; RAVDESS - 39%;
  - algorithm: CNN
  - Facial expressions: Neutral, Anger, Happiness, Anger, Surprise, Sadness, Disgust, Fear
- VIDEO - https://www.youtube.com/watch?v=CVClHLwv-4I&fbclid=IwAR2o_mLoZHYXzg532C rmRQPgUC9uReE9xVkpGkHoTQuagnQ4
- https://blog.rapidapi.com/top-facial-recognition-apis/?fbclid=IwAR374W-397MFM4vsFaL6d1Q
- Emotion Detection Algorithm Using Frontal Face Image https://www.researchgate.net/publication/228870902_Emotion_Detection_Algorithm_Using_Frontal_Face_Image
  - dataset: 20 men and 10 women, under same position and slightly different illumination condition, 5 facial images representing 5 different emotions person.
  - results:

Facial component extraction sucess	82.7%
Fuzzy classification accuracy	89.5%
Final emotion detection accuracy	74.0%

  - algorithm: 3 stages: image precessing stage, facial feature extrac- tion stage, and emotion detection stage
  - Facial expressions: happy, sad, disgust, surprise, and angry

- Image-based emotion recognition using evolutionary algorithms https://www.sciencedirect.com/science/article/abs/pii/S2212683X18300185

- A hybrid approach https://pdfs.semanticscholar.org/d551/0e0d8bdf245d6c8e7cb49ba287f7dca235a.pdf

  - dataset: JAFFE

S. no.	FAR	FRR	Accuracy
1	0.83522	0.01392	98.3809
2	0.83769	0.01547	97.4872
3	0.82357	0.02354	96.2478
4	0.83467	0.03457	97.2547
5	0.82475	0.07589	98.25476
6	0.81752	0.04758	99.1275
7	0.81457	0.24783	98.2457
8	0.81245	0.01457	97.0214
9	0.83213	0.07821	99.0547
10	0.79257	0.05471	98.5749

  - results:
  - algorithm: 5 steps: face acquisition, pre-processing, face detection, feature extraction, classification
  - Facial expressions: Angry, Disgusted, Fear, Happy, Sad and Surprised

- High-performance and lightweight real-time deep face emotion recognition https://www.researchgate.net/publication/319413472_High-performance_and_lightweight_real-time_deep_face_emotion_recognition

  - dataset: AFEW, FER, Cohn-Kanade
  - results: AFEW - 32, 6% ; FER - 70%
  - algorithm: CNN
  - Facial expressions: Anger, Disgust, Fear, Joy, Neutrality, Sadness and Surprise

- TOP 10 - https://www.luxand.com/facesdk/?gclid=Cj0KCQjw84XtBRDWARIsAAU1aM3rgi25ZwcB

Objectives

- Choose a database
- Try out more face recognition sdks
- Choose two sdks from the list above
- Use those 2 and make a comparison
- Create an app which will use the 2 sdks in real-time/recognised by an image

The app's use-cases

open app -> choose algorithm to use -> choose a photo -> analyze the face -> display the emotion and the accuracy -> button for retry

Bibliography