TEAM PROJECT CS 2520 – AACHEN REPRESENT

LINUS PALM

Machine Learning model for Image Classification

MACHINE LEARNING

- **Machine learning** (**ML**) is a field devoted to understanding and building methods that let machines "learn" – that is, methods that leverage data to improve computer performance on some set of tasks.

https://en.wikipedia.org/wiki/Machine_learning

IMAGE CLASSIFICATION

- **Contextual image classification**, a topic of pattern recognition in computer vision, is an approach of classification based on contextual information in images. "Contextual" means this approach is focusing on the relationship of the nearby pixels, which is also called neighbourhood. The goal of this approach is to classify the images by using the contextual information.

https://en.wikipedia.org/wiki/Contextual_image_classification

IDEA

- Train a convolutional neural network to take an image as input and recognize whether it is a man or a woman in the image (just man or woman to keep it simple)
- Write an application that loads this model and lets the user select an image for classification

PYTHON FEATURES

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Other libraries:

- OS
- JSON
- SHUTIL
- NumPy
- Matplotlib
- Cv2
- Tkinter
- Pillow

DEMO

EVALUATION

Model works good, but not perfect:

- Not enought time/computing power to train model on more than 10.000 Images
- Problems with overfitting

LINKS

- GitHub: https://github.com/LinusLinusDev/Image-Classification-with-TF
- Dataset: http://mmlab.ie.cuhk.edu.hk/projects/CelebA.html
- Test runs: https://github.com/LinusLinusDev/Image-Classification-with-TF/blob/main/Test%20runs.pdf