Deep Learning Lecture (Summer 2023)

Project task I, individual work

- You can choose between three tasks:

    1. Create a neural network to recognize your face and clearly distinguish it from other faces and objects. Alternative: Make own suggestion to distinguish an individual object from other objects, follow step 3 (object must be approved by Prof. Stache).
    2. Create a chatbot. This chatbot shall use neural networks (word2vec, LSTM) for natural language processing of the human's textual input. As an output, it should present the requested information / or hand over to a human operator. It is important to describe how this chatbot can be adapted to new tasks.
    3. Own proposal -> must be handed in to Prof. Stache by **18.06.2023**. Your proposal will only be accepted if it is on a similar or higher level of complexity compared to position 1 or 2.

- For task 1, it is mandatory that you create own datasets by yourself; for other tasks it is preferred to do so. However, you can complement your dataset by existing datasets from the internet. You must show examples of self-created data and **state how many samples (absolute and relative number) you created by yourself**.
- For task 1 and derivations: You shall use transfer learning techniques. You must not use the VGG network as it is already available in the notebooks of the lecture

- More precise requirements
    - Provide result in a jupyter notebook (+ external files for the data)
    - Notebook shall contain at least these sections:
        - Data preparation (note: you need to create data)
        - Network training
          (requirements: use other network than VGG, use transfer learning)
        - Evaluation
        - Discussion of the results (also show examples where it fails, discuss why)
    - Notebook must be fully executable!
    - Notebook shall contain explanations in Markdown cells, clarifying *what* is done and *why*.
    - Language can be English or German
    - Results must be individual work, no group work, results are checked for plagiarism!
    - The notebook must be additionally handed in as pdf file (use print to pdf of your browser)
    - Hand it in by upload to Ilias, due date: **20.07.2023, 23:55**.
    - Put all necessary files into a .zip file name it by lastname_firstname.zip
    - Other compressed formats such as .rar or .7zip are **not accepted** – work in such formats will not be graded!

- Please also note that the upload is limited to 300 MB (via ILIAS). Your work, including database must fit into this space.
- For grading, refer to the grading policy in ILIAS

Project survey: After the submission deadline for your project work, a survey with detailed questions about your work will be activated. This survey is an important basis for evaluating the project and providing evidence of your own work performance. Therefore, please note that participation is mandatory and will be subject to time restrictions regarding the maximum processing time. The survey must be completed by **July 24, 11:55 p.m. at the latest**, otherwise points will be deducted for your project work (for details, see assessment guidelines).

Project task II, individual work

In this task you will have to answer a couple of questions on deep learning. You should be able to do so if you followed all the lectures and the provided jupyter notebooks. The task will be provided at the end of the course.