Implementing ANNs with TensorFlow (WS 2022/23)

Final Project
Summary of the meetings with Mathis

Members:
Carmen Amme (994813)
Anneke Büürma (995025)

Tutor:
Mathis Pink

Initializing steps, resource planning and problem discussions:

Since we decided quite fast on a topic as a group, we started our group work by defining some bullet points about our main idea and the methods and toolboxes we want to use. That also included ideas about the dataset and the model architectures we want to implement. With that we met Mathis and talked about the possibilities:

- General
  - nicely structure and comment the code
  - separate functions into different files and load them
- RSA
  - don’t use toolbox, calculate ourselves and save order of the images and values into a matrix
  - just use the regions of interest (ROI) and delete all voxels outside the ROI so we can bypass any RAM and intersectional issues
- Self-trained model
  - think about the resources, tasks and data we have
    → use down-scaled images to train faster and bypass memory constraints (Mathis provides us the images in hdf5-file)
  - read dataset using a generator, load it in small pieces and save them somewhere so we can load it over and over again (especially if you don't have too much RAM)
- Pre-trained models
  - important: normalize and make sure to use same resolution
  - use ResNet50 and ?
  - generate representations from that and compare to other models
    → every layer has a .output attribute to get the activations

- Open Questions
    - How do you calculate the representations from the layer activations?
    - What is the Question we want to answer?

With that input we started implementing until we had some major problems with reading the hdf5-file so that we needed some more input from Mathis for that:

- issue with implementing the generator:
    - had no call function so it couldn't return a dataset
- how to define middle, early and late layers for RSA in the models:
    - don't know → go through the layers (especially pooling layers) to find proper representatives

General Meeting Organization:

In total we had two meetings with Mathis, one in person and one online. Other than that we had some active contact via email. After the second meeting in which we discussed some problems, we encountered further problems while reading the hdf5 file which we were able to solve by contacting Mathis via email. We also answered some questions regarding our model architecture and the RDM output via text messages.