Advanced cognitive neuroscience
practical week 8:
representational similarity analysis

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1 Introduction

In this exercises we will combine what we have learnt so far in a representational similarity analysis (RSA) of a single subject from the Cichy et at. (2014) study. This include comparing the different stimuli with each other in one-vs-one style RSA analysis and saving the decoding accuracy in a data structure.

2 Task

Overall the goal is to create an RSA analysis in a notebook and submit the jupyter notebook on BlackBoard before November 16th.

To limit computational time only the first 24 images will be used.

To complete the task make a notebook that includes but are not limited to:

- classification of all the stimuli in a one-vs-one analysis
  - that is, all combination are tested
  - note that the classification is symmetrical, so classifying A vs B or B vs A gives the same results and only one of the two is needed to computed.
- visualise the results for:
  1. the average results over time; and
  2. body parts vs faces over time

Make sure to add comments and explanations in the this script, it will be reviewed.

3 Getting the data

The data is a single subject from the original data collected by Cichy et al. It is a lengthy experiment and the file is large, approximately 6 GB. So *download the file before the practical class*. To download the file run the following commands in a notebook or python terminal:

```
import mne
from mne.datasets import visual_92_categories

data_path = visual_92_categories.data_path()
```

There have been some issues with downloading some of the data sets on windows machines so please check early and contact me if there are issues with this data set.

References

Cichy, R. M., Pantazis, D., & Oliva, A. (2014). Resolving human object recognition in space and time. *Nature Neuroscience*, *17*(3), 455–462. https://doi.org/10.1038/nn.3635