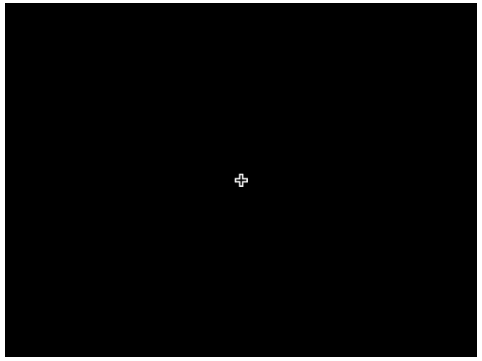
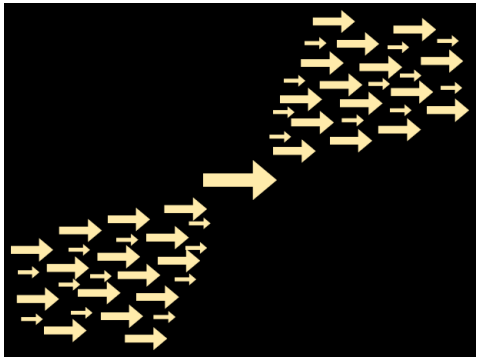
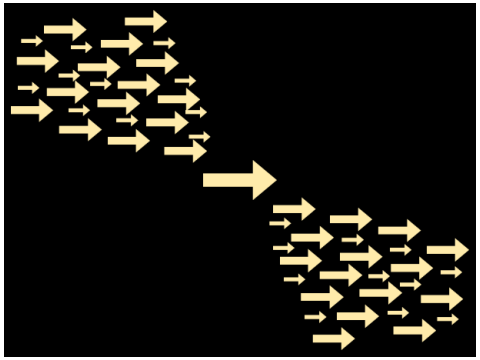
Tutorial – Analysing your own data

Task

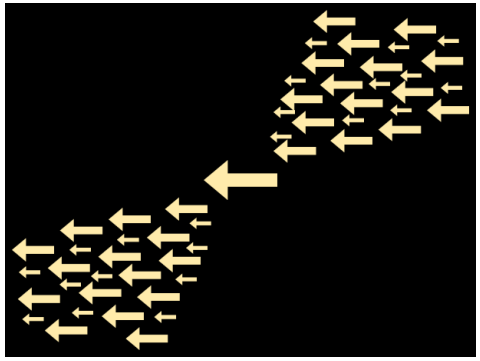


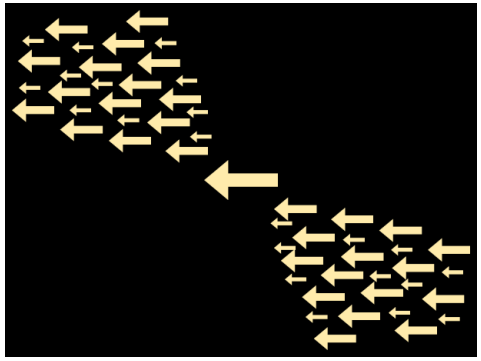
Fixation





Press right





Press left

Design

- First run: Block design – same direction of arrow shown in blocks of 15 seconds with null blocks included.
- Second run: Event related design – direction of arrow changed every 3 seconds with null trials included.

Today's tutorial

- First hour: Create your own preprocessing (and glm) pipeline for one subject.
- Break: Distribution of topics for final presentation MED-Students.
- Second hour: Use a batch and script to process the data.

Organize data


behav – Behavioral data


functional – Functional MRI data for analysis

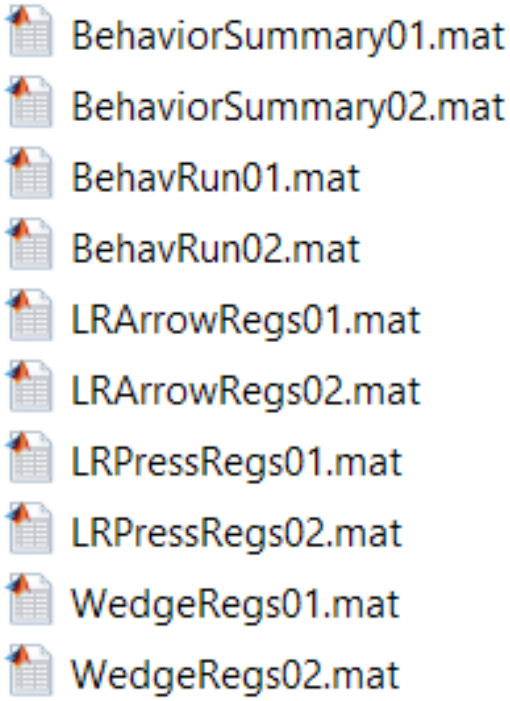

glm – First level analysis and results


physlog – Physiological measurements (not available)


scandata – Original raw data → Never touch this during analysis

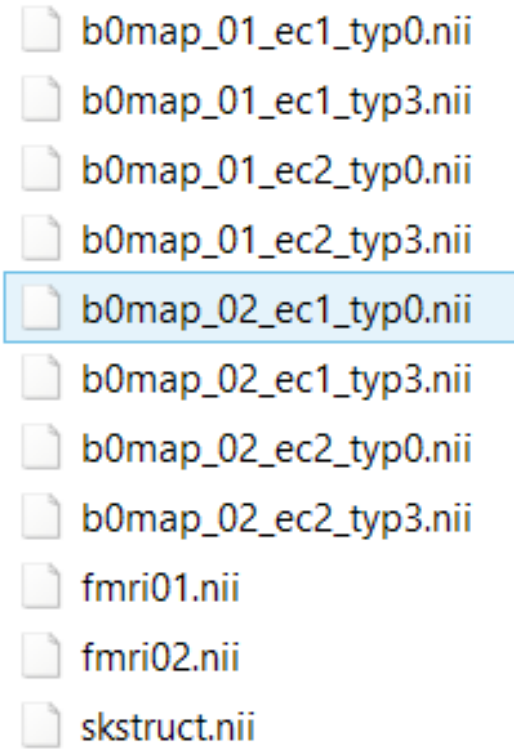

structural – Anatomical/Structural MRI scans for analyis

Behavioral data



- Behavior analysis (Errors etc.)
- All behavioral data
- Regressors (left arrow vs. right arrow)
- Regressors (left press vs. right press)
- Regressors (7-13 wedge vs. 5-11 wedge)

Prepare mri data



- B0 field maps

- fMRI data (T2*) → Copy to folder functional
- Structural data (T1) → Copy to folder structural

Try to setup a preprocessing pipeline

- Hint: Try to put a pipeline together that you think is reasonable, it does not have to be exactly the one we used last week.

Try to setup a glm

- Use one of the regressor types LRArrowRegsXX, LRPressRegsXX, WedgeRegsXX for the two runs.
- Hint: You can use the batch of last week as a starting point.

MED students presentations

- Form 4-5 groups of 2-3 people each.
- Each group will give one presentation about their analysis.
- Within your analysis you should present a specific question (you can come up with your question):
  - E.g. how do results differ between regressors (e.g. LRArrow vs. LRPress)
  - How do results differ across participants?
  - Compare different pipelines, e.g. for preprocessing (with and without slice time correction, …)
  - How do the results change, when motion regressors are included or not, or with and without derivatives of the HRF.

MED students presentations

- On Nov. 6 you will present these analysis. Every person needs to present a short part of the presentation (1-2 slides per person).
- We will then discuss your results together.

Break

Analysis scripts

- Use the two analysis scripts (download ZIP from homepage):

- teach_prepro_subject.m
- teach_glm_subject.m