

29.4.2022

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Brain image analysis intensive course

KUBIAC will organize an intensive course about brain image analysis focusing on animal and human MRI on Tuesday 17th May (9 - 14) and Tuesday 24th May (9 - 14) [so 2x 5 h of lectures]. The instructors will be Raimo Salo and Jussi Tohka, with guest lectures from Mikko Nissi and Alejandra Sierra. The course is online on Zoom. Please register via below link:

<https://forms.office.com/r/YTGjrLC1FG>

The Zoom links will be email to participants before the course

Course objectives:

- Introduction to the basics of MRI
- Image registration in MRI
- Image segmentation in MRI
- Basics of pre-processing for DTI and fMRI
- Statistical analysis of brain imaging data

Course description:

The course is intended for anybody new or willing to learn more of brain image analysis. We aim to serve researchers with different backgrounds, ranging from computer science via medical physics via neurobiology to clinical medicine. The approach is to describe what one should minimally know to be able to learn more and to describe how the image analysis pipeline is traditionally constructed. We aim to give a lot of pointers to extra material that might be of interest to some participants.

Day 1 (17th May). (5x45 min sessions) :

May 17th

9:00 Welcome and practicalities

9:15 Intro to MRI imaging (Mikko Nissi)

9:50 Break

10:00 Pre-processing intra-subject coregistration

11:00 Lunch

12:00 Intra- & inter-subject coregistrations

12:50 Break

13:00 (time-)series-specific adaptations - fMRI + dMRI (slice-timing, eddy current, motion correction) – Raimo

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14:00 End of the day

Day 2 (24th May). (5x45 min sessions) Topics:

9:00 Recap

9:05 Neuro-anatomy (Alejandra Sierra)

9:35 Segmentation + stereotactic (standard) space

10:20 Break - 10 min

10:30 Individual maps

- how to produce dMRI maps - 20 min

- how to produce fMRI maps - 40 min

11:30 Lunch - 1h

12:30 Connectivity - 15 min teaser

12:45 Group statistics from the individual maps

13:45 Application to different data - anatomic + fMRI + dMRI

14:00 End of the day

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