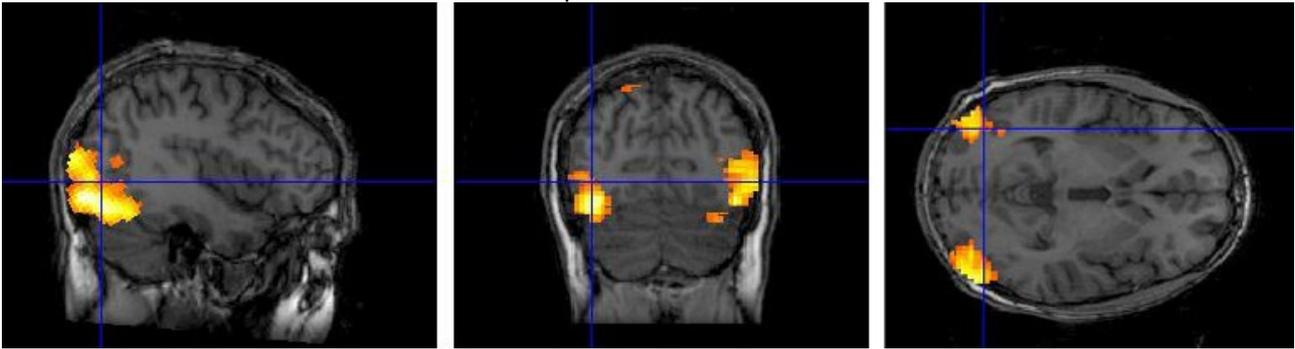


Report on the fMRI school at Aalto University School of Science

April 4-5, 2011



The fMRI school at Aalto School of Science in Espoo, Finland was held from 4th to 5th April 2011. During these two days, intensively filled with lectures and discussions, the research staff of the Brain Research Unit of the Low Temperature Laboratory was able to show functional magnetic resonance imaging from different points of view from physiological basics to final data processing.

The key points of the lectures were:

- basics of MRI and fMRI, particularly BOLD signal and EPI imaging (lectures by Simo Vanni, Irtiza Gilani and Ville Renvall)
- designing a reasonable experiment to result in a significant observable effect (lecture by Simo Vanni)
- basics of pre-processing and processing of fMRI data (lectures by Linda Henriksson, Lauri Nurminen and Simo Vanni)
- final processing, assessment and presentation of fMRI data (lectures by Lauri Nummenmaa, Linda Henriksson, Sanna Malinen and Miika Koskinen).

The last of the mentioned reports was precessed by a short introduction by the course leader Simo Vanni, underlining the significance of functional imaging with impressive results of the latest researches (2008 to 2010). These included the works of Kay ym., Nature 452, describing the ability to decode the contents of the image, shown to the volunteer from his fMRI data and Mitchell et al., Science 320 with literally “brain-reading” (prediction of fMRI picture to result from untested semantic stimulus, leading possibly to decoding of an arbitrary response to a non-predefined semantics).

Additionally, one lecture by Toni Auranen was dedicated to specific activities at Brain Research Unit at Aalto and two lectures by Jaana Hiltunen – to Diffusion Tensor Imaging and tractography. These covered the basics of the whole process from acquiring DTI images to processing and presentation in two clear and vivid lectures with many examples and tips for practical use.

Supported by a friendly atmosphere of appreciation and mutual communication, the school gave any active participant a chance to get to know what modern MR-imaging can do for brain-related research and what it aims at. Along with the information for keen interested starting scientists the school gave a possibility for experienced participants to express their opinions and views on the ongoing practice, giving both sides a chance to learn from each other and to put a new knowledge to practice.