

fMRI Experimental Design

Tools

- Chris Rorden **fMRI Simulator**: <http://www.mccauslandcenter.sc.edu/CRNL/tools/fmrism>
- **optseq2** is a tool for automatically scheduling events for rapid-presentation event-related (RPER) fMRI experiments (the schedule is the order and timing of events):
<http://surfer.nmr.mgh.harvard.edu/optseq/>

Good explanation about optseq and event-related designs:

<http://andysbrainblog.blogspot.de/2012/09/optseq-and-event-related-designs.html>

- **RSFgen** is a AFNI tool for paradigm design:
http://afni.nimh.nih.gov/pub/dist/doc/program_help/RSFgen.html
- **make_random_timing.py** is a AFNI tool to define multiple events, their responses and their time series: http://afni.nimh.nih.gov/pub/dist/doc/program_help/make_random_timing.py.html
- **3dDeconvolve** is a AFNI tool to evaluate the power of each experimental design:
http://afni.nimh.nih.gov/pub/dist/doc/program_help/3dDeconvolve.html

AFNI background experimental design:

http://afni.nimh.nih.gov/pub/dist/HOWTO/howto/ht03_stim/html/stim_background.html

http://afni.nimh.nih.gov/pub/dist/edu/2007_02_korea/pdfs/ExptDsgn.pdf

http://afni.nimh.nih.gov/pub/dist/HOWTO/howto/ht03_stim/html/AFNI_howto.html

Multiple Trial Type fMRI (mttfmri) MATLAB Toolbox

http://fmri.ucsd.edu/tliu/mttfmri_toolbox.html

Theory

K. J. Friston, E. Zarahn, O. Josephs, R. N. A. Henson, A. M. Dale (1999) Stochastic Designs in Event-Related fMRI, *NeuroImage*, 10: 607-619. PMID: 10547338

<http://www.ncbi.nlm.nih.gov/pubmed/10547338> [friston1999_stochastic_designs_in_event-related_fmri.pdf](#)

Design efficiency in fMRI: <http://imaging.mrc-cbu.cam.ac.uk/imaging/DesignEfficiency>

MIT imaging library (with paper PDFs): <http://web.mit.edu/swg/imaginglibrary.htm>

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