

This site uses cookies from Google to deliver its services, to personalize ads and to analyze traffic. Information about your use of this site is shared with Google. By using this site, you agree to its use of cookies.

[LEARN MORE](#) [GOT IT](#)



Sunday, July 29, 2012

## FSL Tutorial 6: Automating FEAT

So now you know enough to run an analysis on your own; Congratulations! However, before you crack open a fresh jar of Nutella to celebrate, be aware that there are other methods that can greatly increase your efficiency, confidence, and libido.

We now turn to a slightly more sophisticated way to run your analyses, that is, through the command line as opposed to the pointing and clicking through the graphical user interface. When I mentioned in the last post that this factors out human error, what I meant was that it eliminates any error due to faulty clicks in the GUI, or fat-finger dialing of any additional parameters. The probability that you would enter everything in by hand the exact same way for every subject is essentially zero. Learning the basics of scripting is essential for any neuroimaging researcher these days, even if it is just to acquire enough familiarity to know what is going on when reading other people's scripts.

Whenever you set up and run an analysis, a file called *design.fsf* is output into each results directory; this contains everything you specified in the GUI, but in text format. This file can also be generated at any time by using the "Save" option within the FEAT GUI, and conversely, can be loaded using the "Load" option; this will fill in all of the fields as they were when you saved the design.fsf file.

Search This Blog

About Me



 **Andrew Jahn**

[Follow](#)

463

Neuroimaging analysis is the center of my research, but learning it was much more difficult than it had to be. Documentation could be complex, and often it was difficult to know how to do certain processing steps and analyses.

My blog and YouTube channel are tools for both beginner and veteran neuroimagers who either need help just getting started, or maybe brushing up on a command that they can't quite remember. In any case, I hope it helps to see *how* certain steps are accomplished.

The power of design.fsf comes from its commandline use. Simply type in "feat design.fsf" and it will execute every command inside the design.fsf file, the same as it would if you were to load it into the FEAT GUI and press the Go button.

Honestly, I am surprised that this feature is not showcased more in the FSL documentation; a couple of lines are devoted to its commandline usage in the FEAT basics section of the manual, but really they should emphasize this much more. (There is a good tutorial [here](#) about how to swap code within the design.fsf file and execute it with feat.) If you are new to Unix and need to get your feet wet, I suggest going through the following tutorials: One for [basic Unix usage](#), the other for [basics of shells scripting](#). This will be a new language to you, and as with any language, the beginning can be disorienting and overwhelming at times; however, stick with it, and I promise that the fog will begin to clear eventually, and you will discern what exactly it is you need to know when searching the help manuals, and what it is that you can disregard.

For those of you who have enough Unix background to feel comfortable reading scripts, here is something I created for a recent study I analyzed. This is a special case, since there were some runs where the participant was not exposed to a condition; in this case, for that regressor FSL requires you to specify the shape as "All Zeroes", something that we did not cover yet, but something that you should be aware of. The following script will check for whether the timing file is empty or not, and adjust the shape specification accordingly; however, it will also work for studies which have all regressors accounted for and do not have any missing data.

Here is the script, which can also be downloaded [here](#); I apologize that the formatting is a little screwy with the margins:

```
#!/bin/bash

for run in 01 02 03 04
do
  #Loops through all runs and replaces "ChangeMe" with run number

  \cp design.fsf tmpDesign.fsf
  sed -i -e 's/run01/runChangeMyRun/' tmpDesign.fsf
  sed -i -e 's/FSL_01/FSL_ChangeMyRun/' tmpDesign.fsf #Replaces run
placeholder with variable "ChangeMyRun"; this will be swapped later
with the appropriate run number
  iter=1 #Counter for running loops below
```

I focus mainly on FMRI, but as time goes on I plan to add other material as well.

[View my complete profile](#)

## Latest Comments

Natalia Kowalczyk commented on [Parameter Extraction With Marsbar](#): "Hi Andy, Could you help me with a question about parameter estimates at 1 level within particular..."

Natalia Kowalczyk commented on [Parameter Extraction With Marsbar](#): "This comment has been removed by the author."

Anonymous commented on [Optseq And Event Related Designs](#): "Dear Andy, thank you for your very useful post. My question regards using optseq2 with two levels of..."

Andrew Jahn commented on [Dti Analysis Steps 1 2 Distortion](#): "Hi Marissa, I'm not sure why that's happening; these days I use TORTOISE to preprocess my..."

Marissa Pifer commented on [Dti Analysis Steps 1 2 Distortion](#): "Hi Andy, I've completed topop successfully, but now I need to run a process through freesurfer..."

Andrew Jahn commented on [Introduction To Functional Connectivity](#): "Hi there, I wouldn't consider it a dense network originally, because some areas are connected..."

Andrew Jahn commented on [Parameter Extraction With Marsbar](#): "If memory serves, there is a slight difference between the two approaches - but I can't..."

Anonymous commented on [Parameter Extraction With Marsbar](#): "Appreciate your speedy response! Is that also true if the parameter estimates were obtained using

```

while [ $iter -le 11 ]
do

    for timingFile in FSL_"$run"_EmotionRegAM.txt
FSL_"$run"_EmotionRegAS.txt FSL_"$run"_EmotionRegNM.txt
FSL_"$run"_EmotionRegNS.txt FSL_"$run"_EmotionResp1.txt
FSL_"$run"_EmotionResp2.txt FSL_"$run"_EmotionResp3.txt
FSL_"$run"_EmotionResp4.txt FSL_"$run"_EmotionResp5.txt
FSL_"$run"_Instructions.txt FSL_"$run"_Relax.txt
    do
        if [ -s ../Timing/$timingFile ]
        then
            echo "File found; timing file is " $timingFile
            sed -i -e 's/fmri(shape'$iter') 3/fmri(shape'$iter') 3/'
tmpDesign.fsf
        else
            echo "File not found; timing file is " $timingFile
            sed -i -e 's/fmri(shape'$iter') 3/fmri(shape'$iter') 10/'
tmpDesign.fsf
        fi
        iter=$(( $iter + 1))
    done
done

\cp tmpDesign.fsf design_$run.fsf #Make a copy for each run
sed -i -e 's/ChangeMyRun/'$run'/' design_$run.fsf #Swap "ChangeMyRun"
with run number
\rm *-e #Remove excess schmutz
feat design_$run.fsf #Run feat for each run
done

```

Note that a template script is generated by copying a script output by FEAT and replacing "run01" with "runChangeMyRun". ChangeMyRun serves as a placeholder for the run number, being updated on each successive iteration of the loop. The script then executes a while loop, checking each timing file for emptiness, and if it is empty, assigning the appropriate shape in the model. Also note that my timing files, in this example, are located in a directory one level above called "Timing"; this may be different for you, so adjust accordingly if you plan on adapting this script for

a..."

Andrew Jahn commented on [Fsl Tutorial Creating Rois From](#): "Hi Emily,I don't know how to do that in FSL, but you could do something like this in..."

Andrew Jahn commented on [Parameter Extraction With Marsbar](#): "Hi there,Yes, it is valid to compare them. Even though both groups may have different average..."


Get this [Recent Comments Widget](#)


30

## Blogroll

 [Doing Bayesian Data Analysis](#)  
Bayesian predicted slopes w with interaction in multiple linear regression  
1 month ago

[Crash Log](#)  
How To: 3D printing your brain  
2 months ago

 [Diffusion Imaging](#)  
A guide to quantifying head motion in DTI studies  
9 months ago

 [Socially Mindful | Connecting neuroscience, psychology and culture to understand our social world](#)  
The most important sense?  
1 year ago

## Fellow BrainBloggers

 Andrew Jahn

 Add to circles

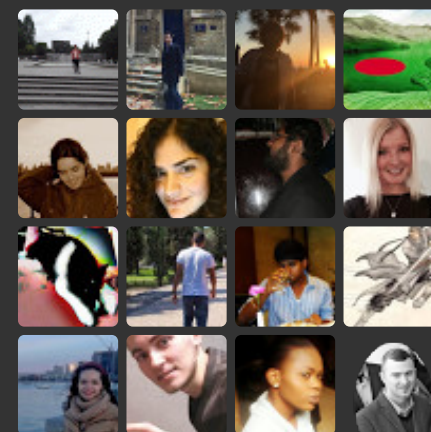
your purposes.

After that, a new design.fsf is generated for each run, and then executed with feat. If you have more than one subject, then it is a matter of adding another loop on top of this one and going through subjects; with higher-level analyses, replacing single runs of data with .gfeat directories; and so on.

For the beginner, I would recommend opening up a generic design.fsf file with a text editor and using search and replace to update it to the next run. After you get a feel for what is going on, spend some time with Unix and monkey around with the "sed" search and replace tool, until you feel comfortable enough to use it on your design.fsf files; then experiment with loops, and test it on a single subject in a copy directory, so that if something blows up (which it inevitably will on your first go-around), you have a backup.

That is it for the basics of FEAT, and, really, all you need to know for carrying out basic analyses in FSL. Interpreting the results is another matter entirely, but once you have the techniques down, a major part of the drudge work is out of the way, and you can spend more time thinking about and looking at your data; which, really, is what we are trained to do in the first place.

More tutorials will be up soon about the basics of Unix, with an eye on assisting the beginning neuroimaging researcher understand what the hell is going on.



have me in circles

[View all](#)

#### Followers

#### Total Pageviews



411,132

#### Blog Archive

- ▶ 2016 (8)
- ▶ 2015 (14)
- ▶ 2014 (63)
- ▶ 2013 (90)
- ▼ 2012 (115)
  - ▶ December (18)
  - ▶ November (18)
  - ▶ October (14)

Posted by [Andrew Jahn](#) at 12:04 PM

Labels: [automation](#), [design.fsf](#), [feat](#), [FSL](#)

# 11 comments:



**thecuriousmind** September 20, 2012 at 12:24 PM

Hey Andrew, this is my first time visiting your blog and I find this post quite helpful. I know how to do FEAT analysis via the GUI and using the command line feat design.fsf but I don't know how to script things. Actually I don't know how to understand a bash script. It seems like a foreign language to me, and the syntax looks kinda complex (compared to MATLAB)

How long do you think it would take to write one's own first shell script to automate FEAT analysis? Do you think before writing one's own script, we gotta be able to understand someone else's script first?

[Reply](#)



**Andrew Jahn** September 20, 2012 at 8:42 PM

Hi thecuriousmind,

I have a brief set of tutorials on Unix covering the fundamentals of the syntax and some shell scripting. I also have a sample script on my homepage under the link "Automated FEAT Analysis."

The script was written for a colleague, and I decided to post it so that others could modify it for their purposes. It may be difficult to parse if you are new to Unix, but it may be a good place to start. As always, let me know if you have any questions!

Best,

-Andy

[Reply](#)

**Anonymous** August 16, 2013 at 8:31 AM

Hello,  
I'm planning to write some scripts of my own and in the process stumbled across yours. I have

▶ [September \(16\)](#)

▶ [August \(14\)](#)

▼ [July \(16\)](#)

[FSL Summary](#)

[FSL Tutorial 6: Automating FEAT](#)

[FSL Tutorials 4-5: Group-Level Analysis](#)

[FSL Tutorial 3: Running The Analysis](#)

[Neuroanatomy Made Fun](#)

[FSL Tutorial 2: FEAT \(Part 3\): For The Wind](#)

[Bayesian Approaches to fMRI: Thoughts](#)

[Breaking Bad](#)

[FSL Tutorial 2: FEAT \(Part 2\): The Reckoning](#)

[FSL Tutorial 2: FEAT \(Part 1\)](#)

[FSL Tutorial 0: Conversion from DICOM to NIFTI](#)

[Repost: Why Blogs Fail](#)

[Chopin:](#)

two questions:

1. In the beginning of the for loop you copy the design.fsf  
(\cp design.fsf tmpDesign.fsf)  
and then later you copy this again  
(\cp tmpDesign.fsf design\_\$run.fsf #Make a copy for each run)  
Is this really necessary? Can't you just copy it once and then alter that?  
Why do you need the tmpDesign.fsf?

2. In the if-condition you have  
sed -i -e 's/fmri(shape'\$iter') 3/fmri(shape'\$iter') 3/' tmpDesign.fsf  
Does this actually do anything?

Best,  
a confused mind

[Reply](#)

#### Replies



**Andrew Jahn** August 22, 2013 at 11:46 AM

Hi Anonymous,

You could just make one copy and loop over each run; my method is slightly more verbose, but I find it easier in case there are differences between runs (e.g., different numbers of TRs).

The sed command was to change the type of waveform without creating a different file (by using the -i option). Again, you may want to alter it to suit your purposes.

Best,

-Andy

[Reply](#)

**Rita** October 31, 2013 at 1:42 PM

Hi Andy,  
Thanks for such a fun and informative blog! I see that this script deals with empty EVs at the first level of analyses, but what do you do for them at the second level (combining across sessions for a single subject)? I've tried a few things but they're all pretty suboptimal.

Nocturne in  
E-flat Major

FSL Tutorial:  
Part 1 (of  
many)

Youtube Music  
Channel

Region of  
Interest  
Analysis

► June (8)

► April (6)

► March (5)

#### Labels

- [fMRI](#) (97)
- [AFNI](#) (75)
- [SPM](#) (46)
- [FSL](#) (29)
- [neuroimaging](#) (14)
- [statistics](#) (14)
- [tutorial](#) (14)
- [Matlab](#) (10)
- [ROI](#) (10)
- [music](#) (10)
- [tutorials](#) (10)
- [functional connectivity](#) (9)
- [cello](#) (8)
- [feat](#) (8)
- [piano](#) (8)
- [graduate school](#) (7)
- [3dDeconvolve](#) (6)
- [analysis](#) (6)
- [nutella](#) (6)
- [vacation](#) (6)
- [3dReHo](#) (5)

P.S. I think the last sed line need a "g" added after the last "/" so that it does a global search and replace.

[Reply](#)

▼ [Replies](#)



**Andrew Jahn** November 4, 2013 at 5:37 PM

Hi Rita,

I haven't made a script to deal with that yet, but I would assume it is a similar process; what have you done so far, and what have you found hasn't worked that well? I'd like to take that into consideration when I make future tutorials on that.

Also, thanks for the heads-up on the sed script; however, I think it should be taken care of by going through the for loop. If you find that it doesn't work as you think it should when applying it to your own data, let me know.

Best,

-Andy

---

[Reply](#)



**M** July 30, 2015 at 1:48 PM

Is setting an EV shape to 10 and having an empty .txt file for that condition the same as not having an EV for that condition? I'm glad I came across this as I've been thinking about how to deal with having different EVs for different subjects. I was thinking about writing an "if" statement where only .txt files present in the subject's directory would be written into the .fsf file, but this solution seems much simpler if it works in a similar way.

[Reply](#)

▼ [Replies](#)



**Andrew Jahn** August 18, 2015 at 10:23 AM

Hey M,

I'm not sure about that; I haven't tried it. I would assume that if there are no onsets in there, it would be treated as an empty file, but you would have to run it both ways to

- [Bootcamp](#) (5)
- [Unix](#) (5)
- [advice](#) (5)
- [parameter extraction](#) (5)
- [regional homogeneity analysis](#) (5)
- [running](#) (5)
- [3dMEMA](#) (4)
- [Bayesian inference](#) (4)
- [Computational modeling](#) (4)
- [GLM](#) (4)
- [NIFTI](#) (4)
- [SPM.mat](#) (4)
- [SUMA](#) (4)
- [academia](#) (4)
- [bach](#) (4)
- [beta weights](#) (4)
- [cognitive control](#) (4)
- [command line](#) (4)
- [debussy](#) (4)
- [dissertation](#) (4)
- [marsbar](#) (4)
- [population](#) (4)
- [power](#) (4)
- [recital](#) (4)
- [region of interest](#) (4)
- [region of interest analysis](#) (4)
- [resting state connectivity](#) (4)
- [sampling distribution](#) (4)
- [scripting](#) (4)
- [smoothing](#) (4)
- [walkthrough](#) (4)
- [2013](#) (3)
- [3dUndump](#) (3)
- [ACC](#) (3)
- [DTI](#) (3)
- [Neuron](#) (3)

check for sure.

Best,

-Andy

[Reply](#)



**Unknown** May 31, 2016 at 2:48 PM

Hi

thanks for your helpfull post, I have a question about entering the data in FSL, my data consists of 34 subjects and each subject has 6runs with different number of volumes!!! how can I enter them to FSL for group analysis ICA?

[Reply](#)

▼ [Replies](#)



**Andrew Jahn**  May 31, 2016 at 3:31 PM

Hello,

What kind of error does it give you when you enter runs with different numbers of volumes? I haven't encountered a situation with different numbers of volumes per run, so I can't give you any advice off the top of my head.

-Andy



**Safa Sanami** June 2, 2016 at 2:23 AM

acutally there is no error on it but it takes a long time to run!!! for 1 subject about 2days! and its still running now

[Reply](#)

- [ROI analysis](#) (3)
- [ROIs](#) (3)
- [anatomical](#) (3)
- [andy's brain blog](#) (3)
- [applet](#) (3)
- [bet](#) (3)
- [beta series correlation](#) (3)
- [brains](#) (3)
- [coregistration](#) (3)
- [correlation](#) (3)
- [data](#) (3)
- [django unchained](#) (3)
- [fslmaths](#) (3)
- [how to](#) (3)
- [introduction](#) (3)
- [jobs](#) (3)
- [marathon](#) (3)
- [money](#) (3)
- [mricron](#) (3)
- [normalization](#) (3)
- [parameter estimate](#) (3)
- [parameter estimates](#) (3)
- [python](#) (3)
- [reaction time](#) (3)
- [reinforcement learning](#) (3)
- [resting state](#) (3)
- [resting-state connectivity](#) (3)
- [schumann](#) (3)
- [script](#) (3)
- [shostakovich](#) (3)
- [slice timing correction](#) (3)
- [uber\\_subject.py](#) (3)
- [variance](#) (3)
- [what is it](#) (3)
- [youtube](#) (3)
- [3dFWHMx](#) (2)

Enter your comment...



Comment as:

**Publish**

**Preview**

[Newer Post](#)

[Home](#)

[Older Post](#)

Subscribe to: [Post Comments \(Atom\)](#)

- [3dREMLfit](#) (2)
- [3dROIstats](#) (2)
- [3dbucket](#) (2)
- [3dcalc](#) (2)
- [3dfim+](#) (2)
- [3dmaskave](#) (2)
- [3dmaskdump](#) (2)
- [BOLD response](#) (2)
- [Beethoven](#) (2)
- [Black Dynamite](#) (2)
- [Central Limit Theorem](#) (2)
- [Cormac McCarthy](#) (2)
- [DICOM](#) (2)
- [E-Prime](#) (2)
- [Excel](#) (2)
- [FIR](#) (2)
- [ICA](#) (2)
- [Jacobs School of Music](#) (2)
- [MELODIC](#) (2)
- [MVPA](#) (2)
- [Neuroimage](#) (2)
- [No. 2](#) (2)
- [Piano Concerto](#) (2)
- [R](#) (2)
- [Red Alert](#) (2)
- [Rstudio](#) (2)
- [Stalin](#) (2)
- [T1](#) (2)
- [Talairach](#) (2)
- [Valentina Lisitsa](#) (2)
- [anterior cingulate](#) (2)
- [articles](#) (2)
- [automated script](#) (2)
- [automatic](#) (2)
- [batching](#) (2)
- [beta estimates](#) (2)

- [beta series](#) (2)
- [beta weight](#) (2)
- [betas](#) (2)
- [blogs](#) (2)
- [book club](#) (2)
- [brain](#) (2)
- [chopin](#) (2)
- [code](#) (2)
- [cognitive neuroscience society](#) (2)
- [command of the week](#) (2)
- [context dependent correlation](#) (2)
- [contrasts](#) (2)
- [datasets](#) (2)
- [demonstration](#) (2)
- [design efficiency](#) (2)
- [duration modulation](#) (2)
- [erotica](#) (2)
- [example](#) (2)
- [first-level analysis](#) (2)
- [friends](#) (2)
- [fslview](#) (2)
- [general linear model](#) (2)
- [grieg](#) (2)
- [hotpockets](#) (2)
- [humor](#) (2)
- [independent components analysis](#) (2)
- [information](#) (2)
- [jags](#) (2)
- [leave one subject out](#) (2)
- [lesion studies](#) (2)
- [lesions](#) (2)
- [lies](#) (2)
- [liszt](#) (2)
- [local connectivity](#) (2)
- [love](#) (2)
- [marathons](#) (2)

- masks (2)
- mean (2)
- memories (2)
- mendelssohn (2)
- modeling (2)
- monkeys (2)
- motion correction (2)
- nabokov (2)
- nature neuroscience (2)
- op. 9 (2)
- organization (2)
- pain (2)
- parametric modulation (2)
- peer review (2)
- psychophysiological interactions (2)
- questions (2)
- registration (2)
- regressors (2)
- relationships (2)
- respighi (2)
- results (2)
- review (2)
- reviews (2)
- sampling distribution of means (2)
- smoothness (2)
- social psychology (2)
- society for neuroscience (2)
- spm\_est\_smoothness (2)
- stress (2)
- subjects (2)
- summary (2)
- surfaces (2)
- t-maps (2)
- teaching (2)
- temporal interpolation (2)
- the manchurian candidate (2)

- [the red and the black](#) (2)
- [to3d](#) (2)
- [toilet paper](#) (2)
- [valentine's day](#) (2)
- [videos](#) (2)
- [voxels](#) (2)
- [writing](#) (2)
- [z-maps](#) (2)
- [.mat files](#) (1)
- [1982](#) (1)
- [1997](#) (1)
- [1d\\_tool.py](#) (1)
- [1deval](#) (1)
- [1dfile](#) (1)
- [1dplot](#) (1)
- [1st level](#) (1)
- [2012](#) (1)
- [2nd level](#) (1)
- [3dBlurInMask](#) (1)
- [3dBlurToFWHM](#) (1)
- [3dClustStim](#) (1)
- [3dNotes](#) (1)
- [3dREMLA](#) (1)
- [3dSynthesize](#) (1)
- [3dTcat](#) (1)
- [3dTproject](#) (1)
- [3dUnifize](#) (1)
- [3dZcat](#) (1)
- [3dZcutup](#) (1)
- [3dcopy](#) (1)
- [3dinfo](#) (1)
- [3drefit](#) (1)
- [3dvolreg](#) (1)
- [5](#) (1)
- [AFNI pen](#) (1)
- [ANALYZE](#) (1)

- [ANOVAs](#) (1)
- [AlphaSim](#) (1)
- [BFF](#) (1)
- [BYOB](#) (1)
- [Bayes](#) (1)
- [Bitch slap](#) (1)
- [Bob Ross](#) (1)
- [CIA](#) (1)
- [CNS](#) (1)
- [CSF](#) (1)
- [Calhoun](#) (1)
- [Cheetos](#) (1)
- [DA](#) (1)
- [DLPFC](#) (1)
- [Deichmann](#) (1)
- [Demos](#) (1)
- [Design](#) (1)
- [ETFs](#) (1)
- [EV](#) (1)
- [FAST](#) (1)
- [FDR](#) (1)
- [FDT](#) (1)
- [FSL FEAT 1+2](#) (1)
- [FSL tutorial](#) (1)
- [Faking data](#) (1)
- [Featquery\\_gui](#) (1)
- [Fugue](#) (1)
- [Fugue on Acid](#) (1)
- [GSR](#) (1)
- [GUI](#) (1)
- [General Electric](#) (1)
- [Grosse Fugue](#) (1)
- [HTML](#) (1)
- [Hammerklavier Sonata](#) (1)
- [Hensen](#) (1)
- [IAPS](#) (1)

- [Ioannidis](#) (1)
- [Jan Gläscher](#) (1)
- [Joshua Carp](#) (1)
- [Karl Friston](#) (1)
- [Keith Bartley](#) (1)
- [Keystone Light](#) (1)
- [Kierkegaard](#) (1)
- [LOSO](#) (1)
- [MGH](#) (1)
- [MNI](#) (1)
- [MakeSpheres.py](#) (1)
- [Marc-Andre Hamelin](#) (1)
- [Montaigne](#) (1)
- [NASCAR](#) (1)
- [NIH](#) (1)
- [New York Times](#) (1)
- [NiTP](#) (1)
- [OFC](#) (1)
- [Octave](#) (1)
- [PATH](#) (1)
- [PPI](#) (1)
- [PPIs](#) (1)
- [Pascal](#) (1)
- [Penderecki Quartet](#) (1)
- [Pensees](#) (1)
- [R studio](#) (1)
- [RETROICOR](#) (1)
- [ReHo](#) (1)
- [ResMS](#) (1)
- [Rules for Reviewing](#) (1)
- [Russ Poldrack](#) (1)
- [SMA](#) (1)
- [SPM.xX.X](#) (1)
- [Saint-Saëns](#) (1)
- [Sameer Sheth](#) (1)
- [Shenhav et al](#) (1)

- Sladky (1)
- Smirnoff Ice (1)
- Soviets are rockin it bro (1)
- Summer Music Festival (1)
- T2 (1)
- TBSS (1)
- TCP (1)
- TENT (1)
- TENT models (1)
- TMS (1)
- TR (1)
- TV (1)
- UCSD (1)
- University of Rochester (1)
- Update (1)
- Wheat Thins (1)
- Xmatrix (1)
- X.xmat.1D (1)
- Yale (1)
- a minor (1)
- abilities (1)
- accompaniment (1)
- acronyms (1)
- acrostics (1)
- adagio and allegro cello (1)
- adrian owen (1)
- adviser (1)
- afni\_proc.py (1)
- agave (1)
- alpha weights (1)
- america (1)
- american cancer society (1)
- amiez 2013 (1)
- amygdala (1)
- anatomical ROI (1)
- andante con variazioni (1)

- andras schiff (1)
- anna karenina (1)
- announcements (1)
- anterior cingulate cortex (1)
- antonio damasio (1)
- anxiety (1)
- applications (1)
- armies (1)
- automate (1)
- automating (1)
- awkward dates (1)
- awkwardness (1)
- bacchanalia (1)
- bach gamba sonata (1)
- ballroom dance (1)
- barry manilow (1)
- bash (1)
- basics (1)
- basis function (1)
- basis functions (1)
- bean burrito (1)
- bear-baiting (1)
- behavioral (1)
- ben folds (1)
- beta estimate (1)
- beta weight extraction (1)
- bias (1)
- biased ROI (1)
- binary (1)
- bivariate correlation (1)
- blanchard (1)
- blog (1)
- blood meridian (1)
- book of genesis (1)
- bootstrapping (1)
- bozo the clown (1)



- braaaaains (1)
- brahms (1)
- brahms cello sonata e minor (1)
- brain extraction (1)
- brain stimulation (1)
- brains how do those work (1)
- breakfast (1)
- breaking bad (1)
- breathing (1)
- bribes (1)
- bro (1)
- brown sugar glaze (1)
- bruckner (1)
- bryan cranston (1)
- bullying (1)
- camtasia (1)
- canonical HRF (1)
- carnegie hall (1)
- cassado (1)
- causal control (1)
- caveat lector (1)
- cd (1)
- cdf (1)
- ceci (1)
- cello concerto (1)
- cello sonata (1)
- cerebral cortex (1)
- ceremony (1)
- chad (1)
- chad the boulder (1)
- chadbrochill (1)
- chalkboard (1)
- chamber music (1)
- changes (1)
- chauffeur (1)
- chess (1)

- [chicks](#) (1)
- [choice](#) (1)
- [chubby bunny](#) (1)
- [cingulate sulcus](#) (1)
- [clara schumann](#) (1)
- [classical conditioning](#) (1)
- [cluster correction](#) (1)
- [cluster thresholding](#) (1)
- [cogneurostats](#) (1)
- [cognitive ability](#) (1)
- [cognitive neuroscience](#) (1)
- [combine ROIs](#) (1)
- [combining subjects with different parameters](#) (1)
- [commentary](#) (1)
- [communism](#) (1)
- [competitiveness](#) (1)
- [computers](#) (1)
- [condition](#) (1)
- [conductance](#) (1)
- [confidence interval](#) (1)
- [conjunction analysis](#) (1)
- [connections](#) (1)
- [connectivity](#) (1)
- [context-dependent correlations](#) (1)
- [continents](#) (1)
- [contrast estimates](#) (1)
- [controls](#) (1)
- [conversion](#) (1)
- [convolution](#) (1)
- [cooking](#) (1)
- [copacabana](#) (1)
- [cope partial model fit](#) (1)
- [cortex](#) (1)
- [covariates](#) (1)
- [craig bennett](#) (1)
- [creating images](#) (1)

- [crime lord](#) (1)
- [cross validation](#) (1)
- [culinary](#) (1)
- [curiosity](#) (1)
- [césar franck](#) (1)
- [d flat major](#) (1)
- [d minor](#) (1)
- [dACC](#) (1)
- [damned lies](#) (1)
- [dark patch](#) (1)
- [daryl bem](#) (1)
- [database](#) (1)
- [date night disaster](#) (1)
- [dates](#) (1)
- [dating coach](#) (1)
- [dayman fighter of the nightman](#) (1)
- [dead salmon](#) (1)
- [dead salmon in an MRI](#) (1)
- [debussy cello sonata](#) (1)
- [deconvolution](#) (1)
- [default poop network](#) (1)
- [defense](#) (1)
- [define markers](#) (1)
- [definition](#) (1)
- [dennis](#) (1)
- [dental hygiene](#) (1)
- [depressing emails](#) (1)
- [design matrix](#) (1)
- [design.fsf](#) (1)
- [despair](#) (1)
- [determination](#) (1)
- [dicom import](#) (1)
- [dicom to nifti](#) (1)
- [diederik stapel](#) (1)
- [diffusion tensor imaging](#) (1)
- [dinner](#) (1)

- dinosaur bar-b-que (1)
- discarding (1)
- disclaimers (1)
- distortion correction (1)
- distractors (1)
- distributions (1)
- dmBLOCK (1)
- dogs (1)
- don juan fantasy (1)
- dopamine (1)
- dorsal anterior cingulate (1)
- double dissociation (1)
- double dissociations (1)
- double-dipping (1)
- drawings (1)
- ducks (1)
- e-flat major (1)
- ecstasy (1)
- eddy correction (1)
- eduardo leite (1)
- educational (1)
- efficient (1)
- eigenvalues: how the heck do those work (1)
- el capitan (1)
- engram (1)
- enhancing cognition (1)
- epic fail (1)
- equilibrium (1)
- error related negativity (1)
- essays (1)
- estimate (1)
- eternal sunshine of the spotless mind (1)
- ethics (1)
- etudes (1)
- event-related designs (1)
- everybody thinks they're only going to have

one but that stuff is too darn sweet it's like candy (1)

- ex-girlfriends (1)
- excitement (1)
- existentialism (1)
- experiment details (1)
- explanatory variable (1)
- extent (1)
- extortion (1)
- faceoff (1)
- fail (1)
- false positives (1)
- fan mail (1)
- fantasie in d minor (1)
- fatigue (1)
- feat.fsf (1)
- featquery (1)
- feedback related negativity (1)
- fellow and farah (1)
- female psychology (1)
- field map unwarping (1)
- fields (1)
- filters (1)
- finite impulse response (1)
- firearms (1)
- fish (1)
- fitted time series (1)
- fmripower (1)
- for loops (1)
- for the wolf (1)
- forward inference (1)
- fossil (1)
- four non-blondes (1)
- fraud (1)
- frontopolar cortex (1)
- frozen wasteland (1)

- [functional](#) (1)
- [functional ROI](#) (1)
- [fundamentals](#) (1)
- [gary](#) (1)
- [gaspard de la nuit](#) (1)
- [gfeat](#) (1)
- [giant squid neuron](#) (1)
- [goathumper Bill](#) (1)
- [good times](#) (1)
- [government shutdown](#) (1)
- [graduation](#) (1)
- [grandiosity](#) (1)
- [grandma's marathon](#) (1)
- [grandmother neurons](#) (1)
- [granola](#) (1)
- [grenadine](#) (1)
- [grieg cello sonata](#) (1)
- [grinband](#) (1)
- [group level analysis](#) (1)
- [guidelines](#) (1)
- [harems](#) (1)
- [hayden](#) (1)
- [heart rate](#) (1)
- [hedonism](#) (1)
- [help](#) (1)
- [hemodynamic response function](#) (1)
- [higher level analysis](#) (1)
- [history](#) (1)
- [hodgkin huxley](#) (1)
- [homebrew](#) (1)
- [horror](#) (1)
- [hot hot heat](#) (1)
- [how do you do](#) (1)
- [how does that work](#) (1)
- [how many subjects should you have](#) (1)
- [how to be a good graduate school applicant](#) (1)

- [how to create ROI from sphere in FSL](#) (1)
- [how to create ROIs](#) (1)
- [how to create contrast images](#) (1)
- [how to do](#) (1)
- [how to get one](#) (1)
- [how to get the girl of your dreams](#) (1)
- [how to write out](#) (1)
- [how to you get degrees of freedom from FMRI data](#) (1)
- [humungo garbanzo](#) (1)
- [ide et al 2013](#) (1)
- [ideal fit](#) (1)
- [image registration](#) (1)
- [imagery](#) (1)
- [impromptu a flat major op 142 no 2](#) (1)
- [inception](#) (1)
- [indianapolis marathon](#) (1)
- [inferolateral cortex](#) (1)
- [insane](#) (1)
- [insanity](#) (1)
- [insecurity](#) (1)
- [install](#) (1)
- [intensity](#) (1)
- [interactions](#) (1)
- [interpolation](#) (1)
- [interpretation](#) (1)
- [interview](#) (1)
- [investing](#) (1)
- [ireland](#) (1)
- [jack daniels running formula](#) (1)
- [jeanette mumford](#) (1)
- [jobman](#) (1)
- [john bargh](#) (1)
- [john's gems](#) (1)
- [journal](#) (1)
- [journal of neuroscience](#) (1)

- [k-means clustering](#) (1)
- [karaoke](#) (1)
- [karl lashley](#) (1)
- [kernel](#) (1)
- [kinderszenen](#) (1)
- [krishnan](#) (1)
- [la fille aux cheveux de lin](#) (1)
- [lakefront](#) (1)
- [lawsuits](#) (1)
- [learn r](#) (1)
- [learning](#) (1)
- [lectures](#) (1)
- [lee](#) (1)
- [list](#) (1)
- [livestream](#) (1)
- [lolita](#) (1)
- [los angeles](#) (1)
- [ls](#) (1)
- [machine guns](#) (1)
- [mackey](#) (1)
- [mad libs](#) (1)
- [madness](#) (1)
- [mafia](#) (1)
- [main effects](#) (1)
- [making up data](#) (1)
- [male member](#) (1)
- [manual](#) (1)
- [mathematics](#) (1)
- [matlab code](#) (1)
- [melatonin](#) (1)
- [melodic ica](#) (1)
- [mendeley](#) (1)
- [meta analysis](#) (1)
- [metal gear solid](#) (1)
- [metal rods](#) (1)
- [meth](#) (1)



- [microwaves](#) (1)
- [mill](#) (1)
- [milwaukee](#) (1)
- [miscellaneous](#) (1)
- [mkdir](#) (1)
- [model](#) (1)
- [model comparison](#) (1)
- [model fit](#) (1)
- [model specification](#) (1)
- [model-based](#) (1)
- [model-based analysis](#) (1)
- [model-free](#) (1)
- [models](#) (1)
- [monumental marathon](#) (1)
- [morals](#) (1)
- [motel 6](#) (1)
- [motivation](#) (1)
- [motor cortex](#) (1)
- [mozart](#) (1)
- [multiple comparisons](#) (1)
- [multiple regression](#) (1)
- [multivariate pattern analysis](#) (1)
- [my dad](#) (1)
- [my tie matches her dress in case you were wondering](#) (1)
- [n-1](#) (1)
- [national institutes of health](#) (1)
- [nature](#) (1)
- [neglect](#) (1)
- [nerd baller](#) (1)
- [nerd up](#) (1)
- [nerdity](#) (1)
- [neuroanatomy](#) (1)
- [neuroimagers](#) (1)
- [neuroimaging training program](#) (1)
- [neurons](#) (1)
- [neuropower](#) (1)

- [neuropowertools.org](#) (1)
- [neurosynth](#) (1)
- [new website](#) (1)
- [nickelback](#) (1)
- [no. 1](#) (1)
- [nocturne](#) (1)
- [nocturne in b-flat minor](#) (1)
- [noisy neighbors](#) (1)
- [non-independent ROI](#) (1)
- [non-normal population](#) (1)
- [nosehairs](#) (1)
- [nosek](#) (1)
- [notes](#) (1)
- [nuisance regressor](#) (1)
- [null distribution](#) (1)
- [null hypothesis significance testing](#) (1)
- [nutrition](#) (1)
- [nuts](#) (1)
- [o'doherty](#) (1)
- [oatmeal](#) (1)
- [objects](#) (1)
- [official](#) (1)
- [oh no they didn't](#) (1)
- [ones](#) (1)
- [onions](#) (1)
- [op. 36](#) (1)
- [optseq](#) (1)
- [orchestra](#) (1)
- [orts](#) (1)
- [ouch](#) (1)
- [out of order](#) (1)
- [p value](#) (1)
- [p-values](#) (1)
- [paired t-tests](#) (1)
- [pancakes](#) (1)
- [paper](#) (1)

- [papers](#) (1)
- [paracingulate sulcus](#) (1)
- [parameter](#) (1)
- [parameter estimation](#) (1)
- [parametric modulator](#) (1)
- [parametric modulators](#) (1)
- [parrec](#) (1)
- [participant tracking](#) (1)
- [parvizi](#) (1)
- [patient populations](#) (1)
- [paula croxson](#) (1)
- [peace on earth](#) (1)
- [percent signal change](#) (1)
- [performance](#) (1)
- [peristimulus plots](#) (1)
- [personal photo](#) (1)
- [personality project](#) (1)
- [peters](#) (1)
- [phd](#) (1)
- [phineas gage](#) (1)
- [physiological](#) (1)
- [piano sonatas](#) (1)
- [piano trio 3](#) (1)
- [pick-up artists](#) (1)
- [pictures](#) (1)
- [pilot](#) (1)
- [pinching](#) (1)
- [plagiarism](#) (1)
- [planner](#) (1)
- [plans](#) (1)
- [plasticity](#) (1)
- [playing cards](#) (1)
- [playlist](#) (1)
- [pontificating](#) (1)
- [porridge](#) (1)
- [postdecisional](#) (1)

- poster (1)
- poststats (1)
- potassium (1)
- precognition (1)
- prediction (1)
- prediction error (1)
- preludes (1)
- preparation (1)
- preprocessing (1)
- prestats (1)
- printers (1)
- pro tips (1)
- prokofiev (1)
- prokofiev cello sonata (1)
- prospectus (1)
- psychology (1)
- psychopathy (1)
- psychosis (1)
- psychotic nurse (1)
- publication (1)
- publication fees (1)
- punctate (1)
- purity of essence (1)
- purpose (1)
- putamen (1)
- q and a session (1)
- qualification exams (1)
- quick (1)
- quotes (1)
- r statistical software (1)
- r to z transform (1)
- r-to-z transformation (1)
- race (1)
- races (1)
- racing (1)
- ravel violin sonata (1)

- [real talk](#) (1)
- [real ultimate power](#) (1)
- [realignment](#) (1)
- [recipes](#) (1)
- [recommendations](#) (1)
- [record](#) (1)
- [recording](#) (1)
- [regress out](#) (1)
- [regression](#) (1)
- [regressor](#) (1)
- [reinhard woodman 2014](#) (1)
- [reliability](#) (1)
- [removal](#) (1)
- [reordering](#) (1)
- [report from the front](#) (1)
- [reproducibility](#) (1)
- [resampling](#) (1)
- [reslice](#) (1)
- [respect](#) (1)
- [resphigi](#) (1)
- [resting state analysis](#) (1)
- [reverse inference](#) (1)
- [reviewer #2](#) (1)
- [reward prediction error](#) (1)
- [ric flair](#) (1)
- [rm](#) (1)
- [rmdir](#) (1)
- [rochester](#) (1)
- [romance](#) (1)
- [résumé](#) (1)
- [sabotage](#) (1)
- [sacrifice](#) (1)
- [salmon](#) (1)
- [sample](#) (1)
- [sample means](#) (1)
- [sample sizes](#) (1)

- [samples](#) (1)
- [san diego](#) (1)
- [san francisco](#) (1)
- [sappho](#) (1)
- [saved by the bell.](#) (1)
- [saving images](#) (1)
- [schubert](#) (1)
- [schultz et al](#) (1)
- [science](#) (1)
- [scientific communication](#) (1)
- [scientific standards](#) (1)
- [scrapie](#) (1)
- [scripts](#) (1)
- [second-level analysis](#) (1)
- [segmentation](#) (1)
- [selecting sub-briks out of range](#) (1)
- [selection](#) (1)
- [self-criticism](#) (1)
- [senior recital](#) (1)
- [sequence](#) (1)
- [servers](#) (1)
- [session structure](#) (1)
- [setting the origin](#) (1)
- [sexiness](#) (1)
- [she's italian](#) (1)
- [shell scripting](#) (1)
- [shirley temple](#) (1)
- [shirts](#) (1)
- [shirts!](#) (1)
- [shostakovich cello concerto no. 1](#) (1)
- [shostakovich piano quintet g minor](#) (1)
- [shostakovich piano trio no. 2](#) (1)
- [should you go](#) (1)
- [showcase quadruple threat](#) (1)
- [signal](#) (1)
- [simulation](#) (1)

- [sinfonia concertante](#) (1)
- [size](#) (1)
- [ski parkas](#) (1)
- [skills](#) (1)
- [slackers](#) (1)
- [slam dunk](#) (1)
- [slice analysis](#) (1)
- [slices](#) (1)
- [slider](#) (1)
- [small volume correction](#) (1)
- [snaaaake](#) (1)
- [snacks](#) (1)
- [snake](#) (1)
- [so what](#) (1)
- [socially mindful](#) (1)
- [socks](#) (1)
- [sodium](#) (1)
- [soreness](#) (1)
- [spatial interpolation](#) (1)
- [spatial navigation](#) (1)
- [spatial specificity](#) (1)
- [speaking](#) (1)
- [specific](#) (1)
- [sphere](#) (1)
- [spline](#) (1)
- [spm\\_defaults](#) (1)
- [spm\\_get\\_data](#) (1)
- [spm\\_imcalc](#) (1)
- [spm\\_imcalc\\_ui](#) (1)
- [spm\\_jobman](#) (1)
- [sprite](#) (1)
- [spurious](#) (1)
- [sputum](#) (1)
- [ssh](#) (1)
- [stage fright](#) (1)
- [standard error](#) (1)

- [standard error of the mean](#) (1)
- [standardized space](#) (1)
- [stapler](#) (1)
- [start to finish](#) (1)
- [state prediction error](#) (1)
- [statistic](#) (1)
- [statistical correction](#) (1)
- [statistical sensitivity](#) (1)
- [stats](#) (1)
- [steady state](#) (1)
- [steinberg](#) (1)
- [still alive](#) (1)
- [stim\\_times\\_IM](#) (1)
- [strauss](#) (1)
- [strauss cello sonata](#) (1)
- [strauss cello sonata op. 6](#) (1)
- [stroop](#) (1)
- [structure](#) (1)
- [stuff](#) (1)
- [subfields](#) (1)
- [sums of squares](#) (1)
- [surface maps](#) (1)
- [surface rendering](#) (1)
- [swat](#) (1)
- [sweat](#) (1)
- [swick and turken](#) (1)
- [swirlies](#) (1)
- [t statistic](#) (1)
- [t-tests](#) (1)
- [tal yarkoni](#) (1)
- [tartuffe](#) (1)
- [tcsh](#) (1)
- [template](#) (1)
- [temporal autocorrelation](#) (1)
- [temporal derivative](#) (1)
- [temporal difference](#) (1)



- temporal filtering (1)
- tennis (1)
- testing (1)
- thanksgiving (1)
- that one dataset in ten thousand (1)
- thats gotta hurt (1)
- the French (1)
- the houdini (1)
- the judge (1)
- the luckiest (1)
- the truth (1)
- the womb (1)
- theory (1)
- threshold (1)
- timeseries (1)
- timing (1)
- timing information (1)
- tom waits (1)
- top gun (1)
- topup (1)
- toy brain (1)
- transcranial magnetic stimulation (1)
- traumatic childhood (1)
- travel (1)
- trick (1)
- troubleshooting (1)
- try r (1)
- ttest (1)
- tunneling (1)
- uber\_ttest.py (1)
- ucla (1)
- un sospiro (1)
- uncanny valley (1)
- undergraduates (1)
- underpowered (1)
- updates (1)

- [van dijk](#) (1)
- [vegetative state](#) (1)
- [vermin](#) (1)
- [video games](#) (1)
- [viennese waltz](#) (1)
- [violation](#) (1)
- [violin sonata a major](#) (1)
- [visions](#) (1)
- [visualizing results](#) (1)
- [vmc](#) (1)
- [vnc](#) (1)
- [voltage](#) (1)
- [voxel-based morphometry](#) (1)
- [wagenmakers](#) (1)
- [wager](#) (1)
- [waldstein](#) (1)
- [walkthroughs](#) (1)
- [walter white](#) (1)
- [warping](#) (1)
- [water polo](#) (1)
- [waver](#) (1)
- [web application](#) (1)
- [weed whipper](#) (1)
- [weights](#) (1)
- [what does cshrc stand for](#) (1)
- [what does it mean](#) (1)
- [what good is it](#) (1)
- [what you need to know](#) (1)
- [what's inside it](#) (1)
- [when stuff goes wrong](#) (1)
- [where does it come from](#) (1)
- [white matter signal](#) (1)
- [why black dynamite why](#) (1)
- [why do people try to high-five you on the racecourse](#) (1)
- [wilder penfield](#) (1)
- [will to persevere](#) (1)

- [winnipeg](#) (1)
- [wishy-washy](#) (1)
- [woo](#) (1)
- [wordsworth](#) (1)
- [workshop](#) (1)
- [worry](#) (1)
- [x-men](#) (1)
- [yamaha CLP-320](#) (1)
- [yeah mr. white](#) (1)
- [yeah science](#) (1)
- [year in review](#) (1)
- [yoda](#) (1)
- [yuck](#) (1)
- [z direction](#) (1)
- [zpad](#) (1)

Simple template. Powered by [Blogger](#).