Hands-On Data Analysis

- Data from safety training
  - 9 subjects
  - Finger-tapping task (12s tapping, 12s rest)
  - 188 scans acquired over 6:16 (TR = 2)
  - Hi-res structural image
- Single-subject analysis in FSL

Finding the Data

- Open terminal window
  - Navigate to directory

    (type: cd /home/public/coursedemo/fsl)
  - Choose subject (/subj1 through /subj9)

    (type: cd subj1 (or subj2, subj3, etc..))

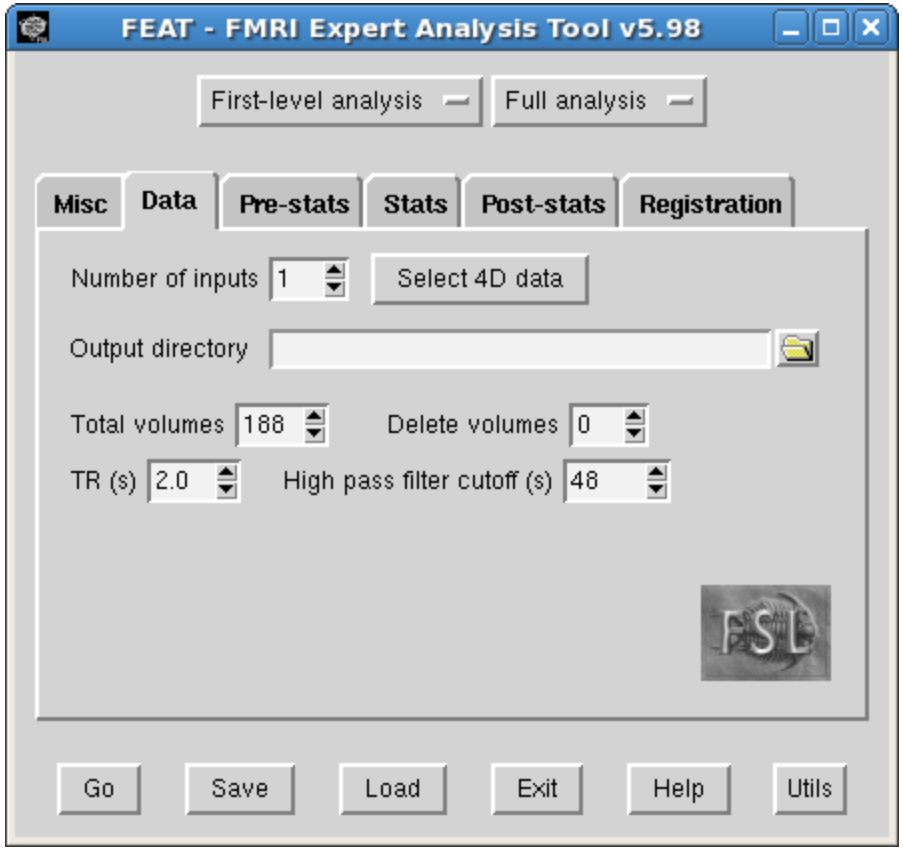
- Data already converted from dicom format
  - Hi-res structural: T1mprages002a1001…
  - Functional: fmri12secon12secoff…
  - timing.txt

FSL: Single Subject

- Launch FSL:

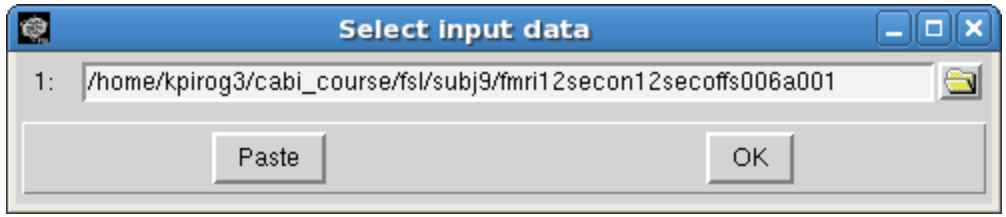
  type fsl &

- Data tab
  - First, must select functional dataset: Select 4D data

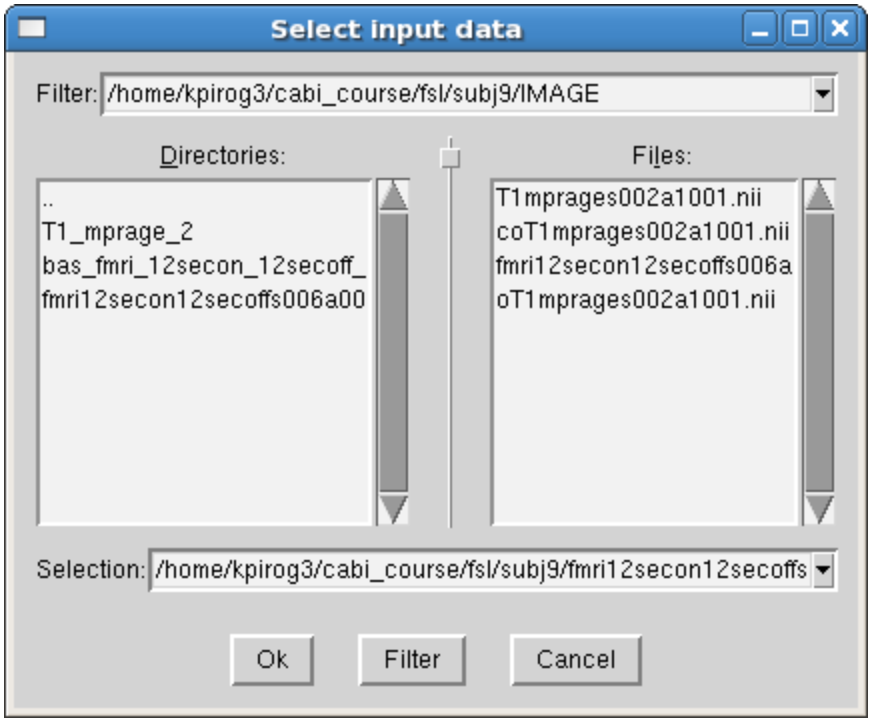


FSL: Single Subject

- Click on folder to open file selection dialog



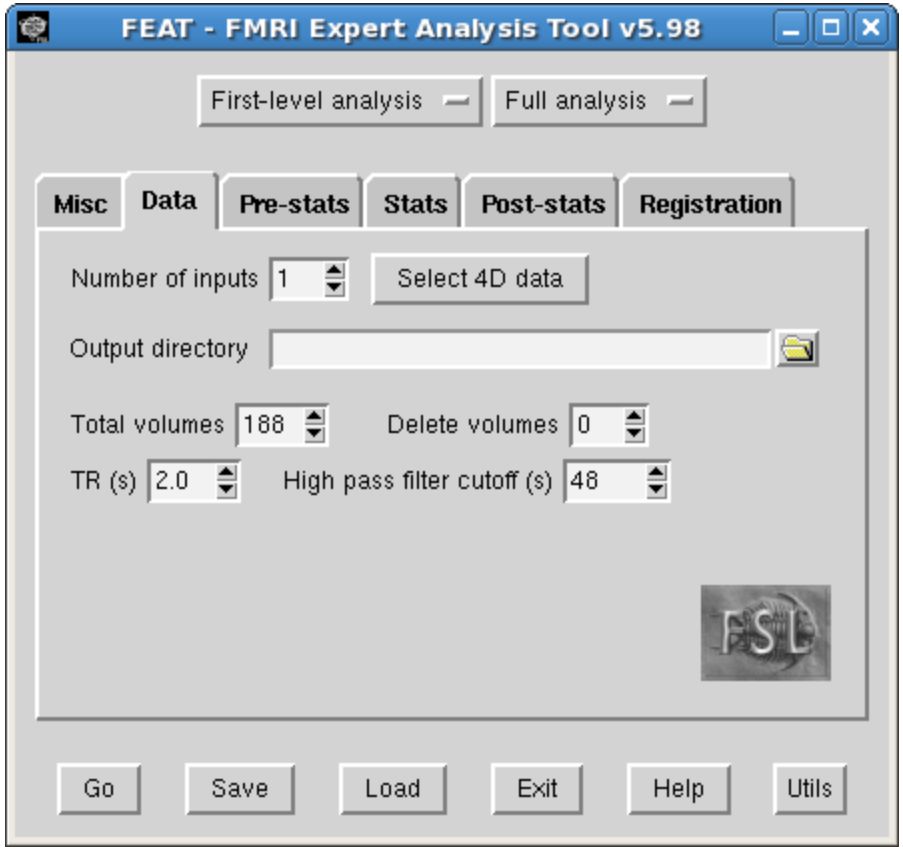
- Select fmri12sec… file



- Click ok in both boxes

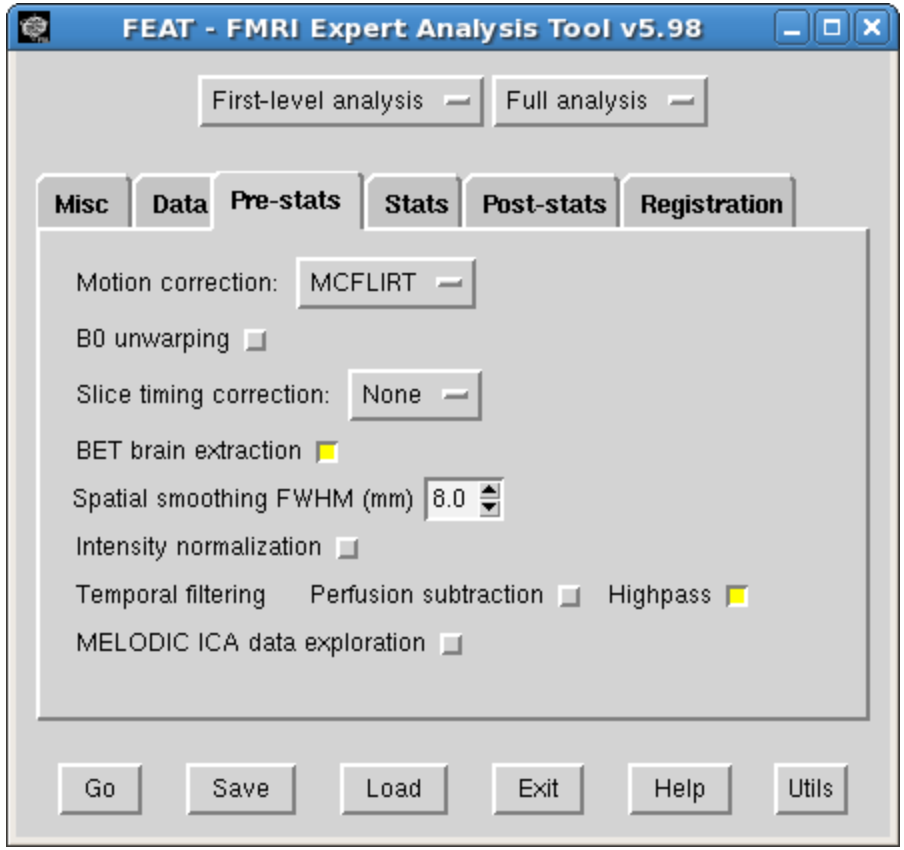
FSL: Single Subject

- Data tab:
  - Set TR = 2
  - Set high-pass cutoff to 48 (2 x block size)
  - Delete 0 volumes
  - Total volumes and output directory set automatically



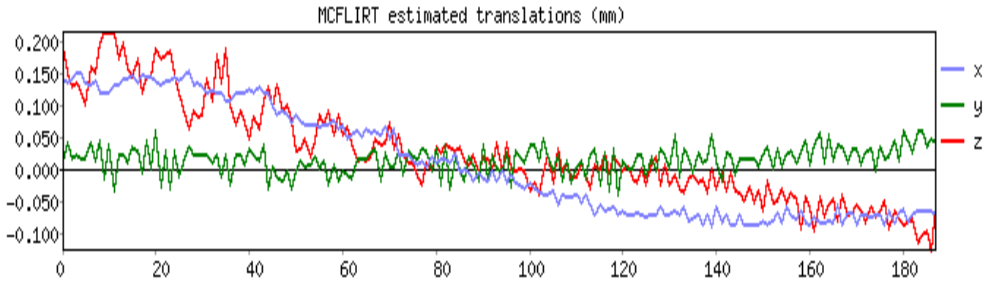
FSL: Single Subject

- Pre-Stats tab
  - Set spatial smoothing to 8mm
  - Other settings ok

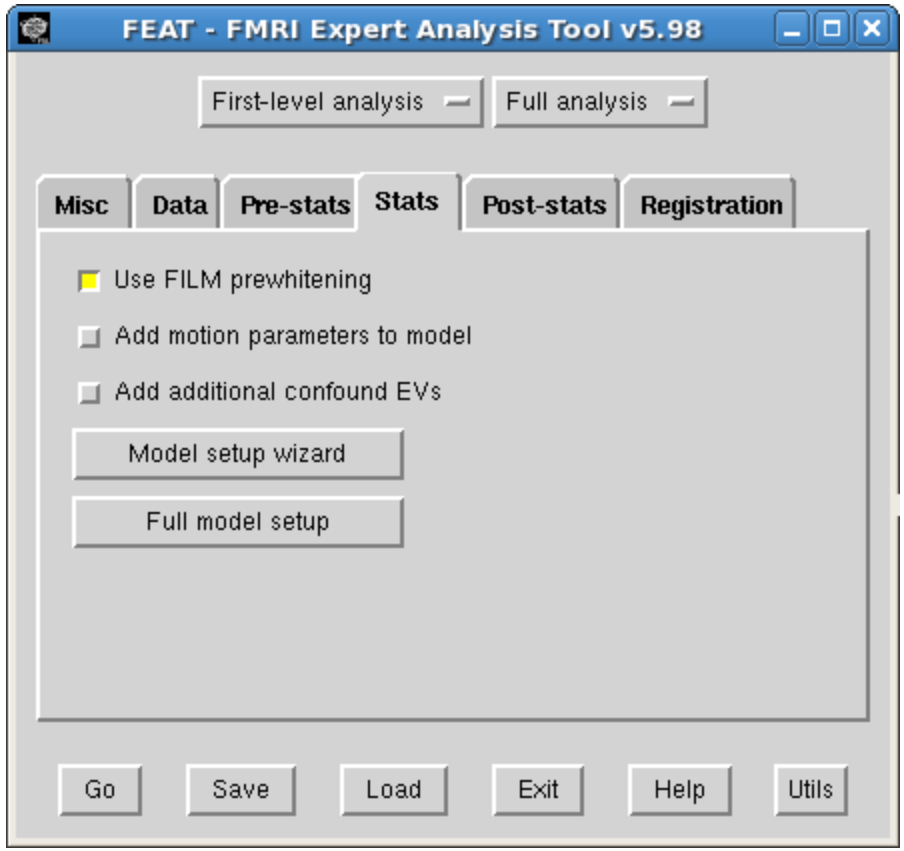


FSL: Single Subject

- Stats Tab
  - Don't add motion parameters

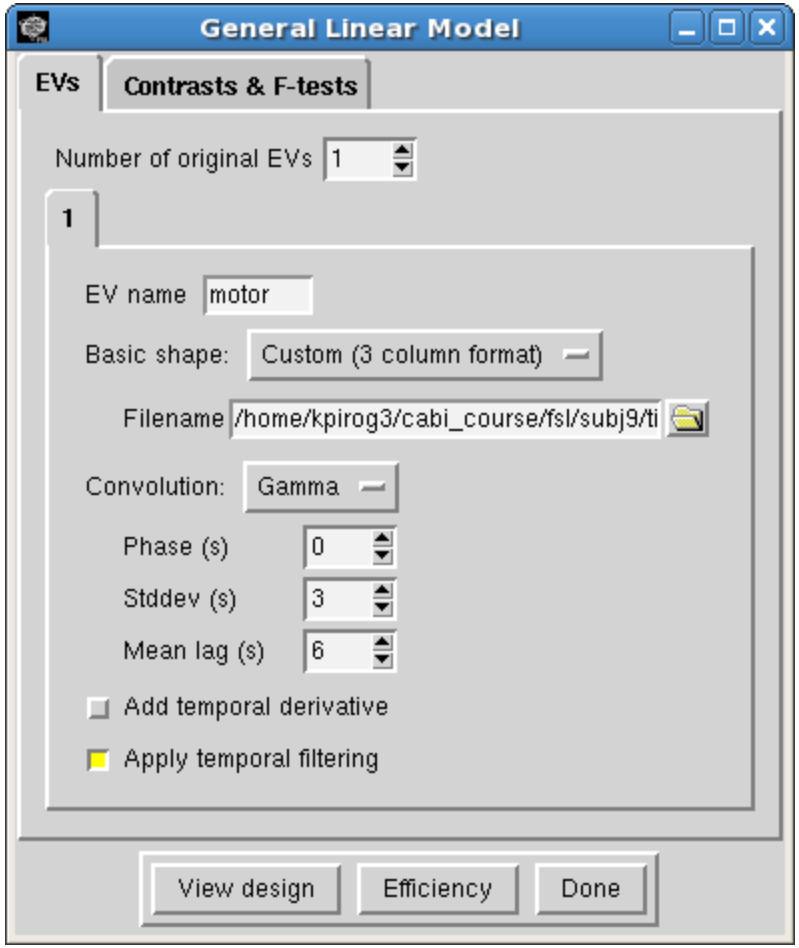


- Choose full model setup



FSL: Single Subject

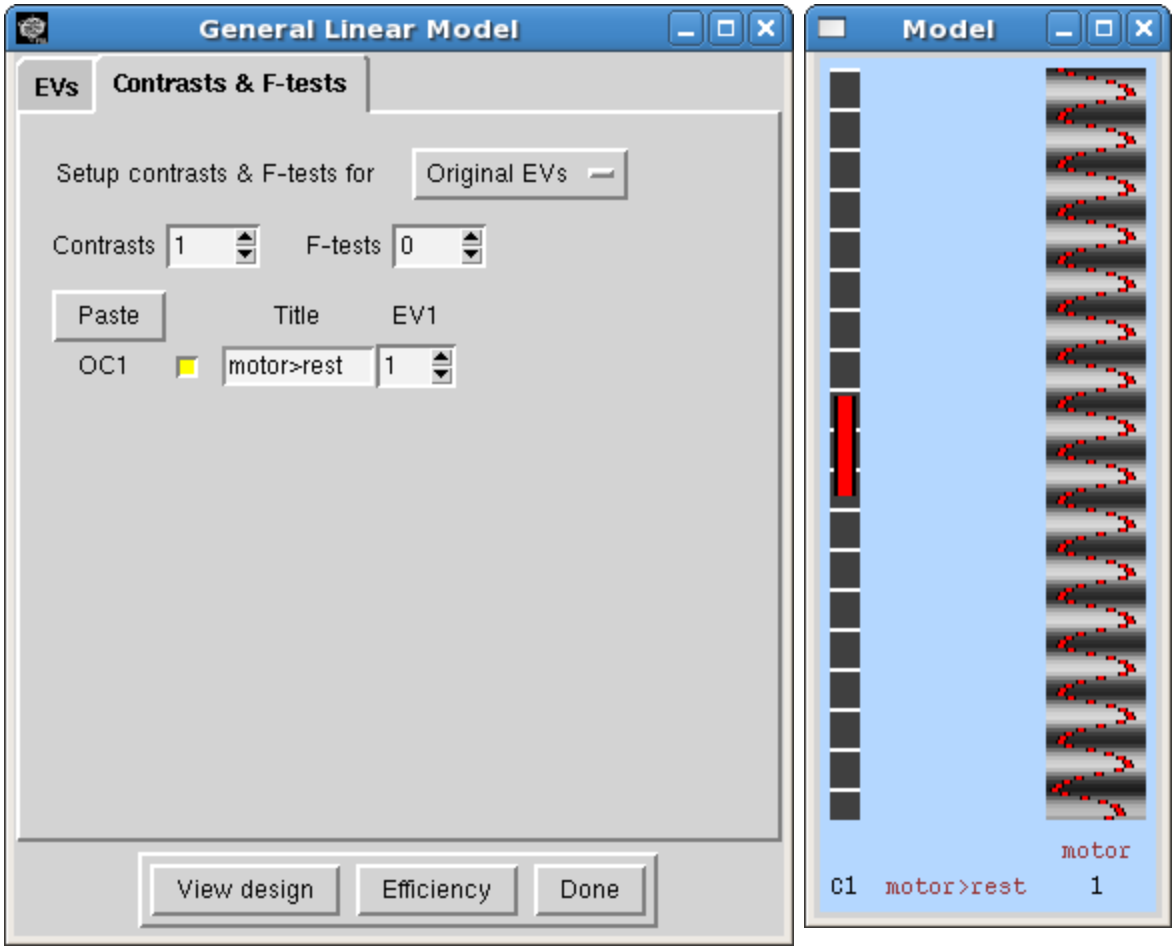
- One explanatory variable: motor
  - Custom format
    - Choose timing.txt (3 column file with block onsets, durations, and strengths)
  - Uncheck temporal derivative (block design)



FSL: Single Subject

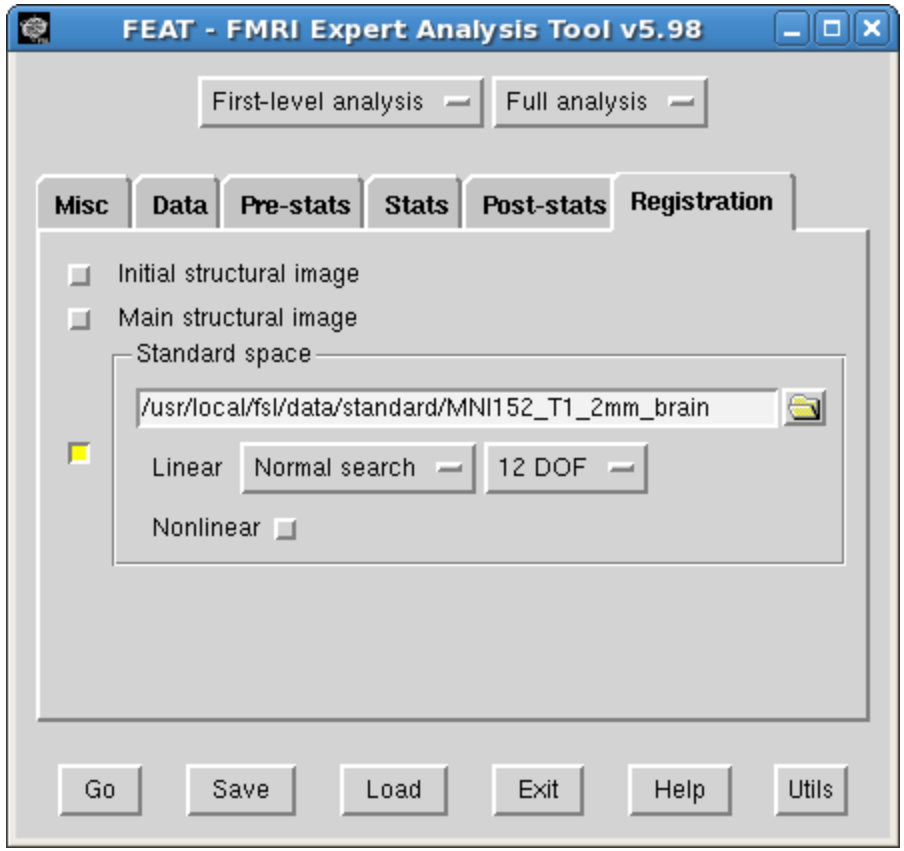
- Contrasts tab
  - One contrast: areas more active during the motor task than during rest
  - Name it motor>rest

- Click Done, model will appear: does it make sense?
  - (click on it to make it disappear)



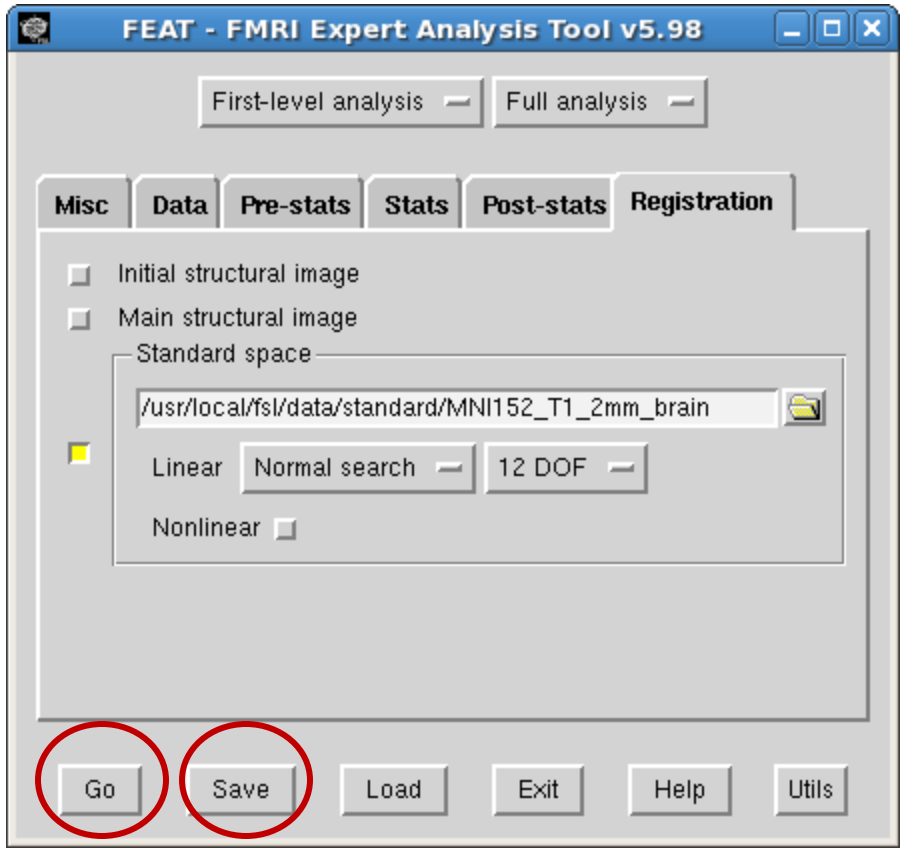
FSL: Single Subject

- Registration
  - Make sure Normal search, 12 DOF are selected
  - Could add hi-res structural here, but won't to save time & preprocessing steps

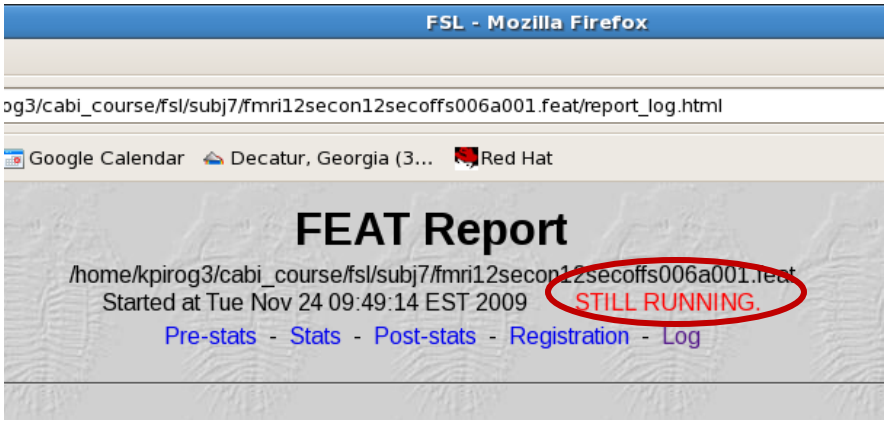


FSL: Single Subject

- Save as design.fsf
- Click Go to start analysis
- Web browser will open to track progress (takes ~ 10 minutes)



FSL: Single Subject

- Done? Check it out…

- Click on blue links to view results:
  - Pre-stats: motion parameters
  - Stats: model design
  - Post-stats: activation map and voxel fits
  - Registration: alignment of functional image to template