

Neuroimaging Methods:

What to use for which question

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Many, Many Options



- As neuroimaging grows, the number of programs grows too!
- Commercial, house-made, nerd-made...
- What suites your taste? (how much programming, how much patience, etc.)

Databases for Neuroimaging Tools

- Neuroimaging Informatics Tools and Resources Clearinghouse (NITRC):
www.nitrc.org/
- Internet Analysis Tools Registry:
www.cma.mgh.harvard.edu/iatr/display.php

Types of Tools

- Functional Analysis (fMRI)
- Structural Analysis (MRI, DTI, etc.)
- Viewers, Atlases
- Meta-Analysis Tools
- Random extras



Functional Analyses

Program	Pros	Cons
BrainVoyager	Pretty GUI, easy to use, good support	Need license key, “black box”
SPM	80s GUI, powerful, good documentation	Need Matlab, version-specific, baby “black box”
FSL	80s GUI, powerful and clear, good documentation, methods done!	Need programming, so many words....

Functional Analyses

Program	Who Should Use	Cautions
BrainVoyager	Newbs, Experienced programmers	Good training, less good transparency
SPM	Newbs with more patience, Anyone	Patience with Matlab and versions, don't batch at first
FSL	Newbs with some programming experience, Anyone	Can still give spurious results; Check each step and don't batch at first!

Functional Analyses

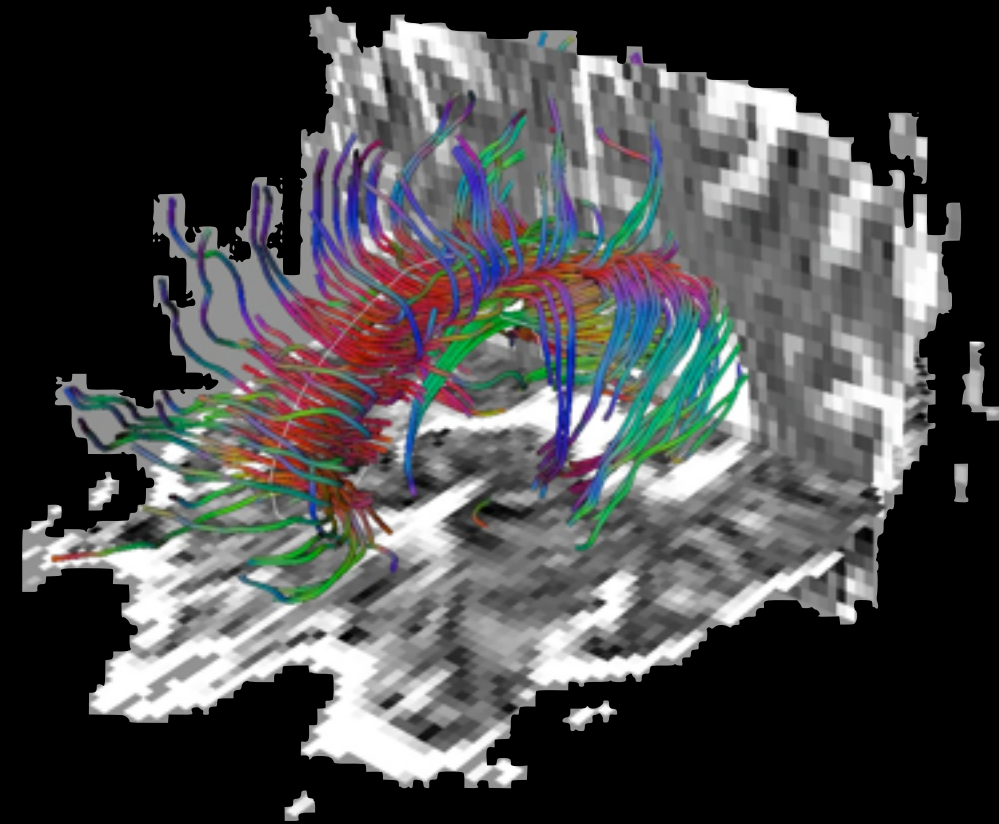
- GLM
- Small volume correction
- ROI-based
- Timecourse analysis (PEATE - Jonas)
- Functional connectivity (Tong, Helder)
- Laterality index (Katie)

Structural Analyses

- BrainSuite - structural
- BrainVox - lesions
- Freesurfer - cortical & subcortical anatomy
- Can also do in BV, SPM, FSL, etc. for VBM, cortical thickness, cortical segmentation

Structural Analyses-DTI

- FSL
- Diffusion Toolkit and TrackVis
- MedINIRA
- Glenn's bomb old PI's program



Viewers & Atlases

- MRICron
- MANGO (incl' for iPad!)
- XJView (SPM)
- Probabilistic Atlas toolbox (SPM)
- FSLView (FSL) + Atlases



Meta-Analysis Tools

- GingerALE
- AMAT
- fMRI Data Center
- SumsDB (Van Essen Lab)
- NIDAG
- NeuroSynth

Random Extras

- OptimizeDesign
- AFNI - super hard core
- Transforming orientation:
 - dcm2nii (script/command line)
 - AIR

Bottom Line

- There are lots of ways to run your analyses
- Asking around about them always helps!

Bottom Line

Oh, and a little frustration is normal!



FRUSTRATION

No matter how many times you try, you can't shoot the dog

Questions?

Thanks!

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