

Anatomical and Functional Connectivity in AFNI & SUMA

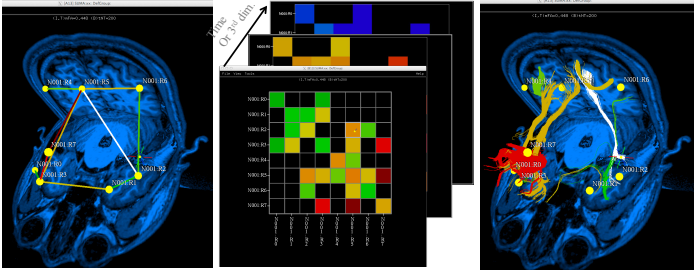


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Connectivity Matrices as Datasets

Simultaneous linked rendering in graph and matrix modes
 3D matrices supported (e.g. time varying correlation matrix)



Edges rendered as segments, cells, or tracts

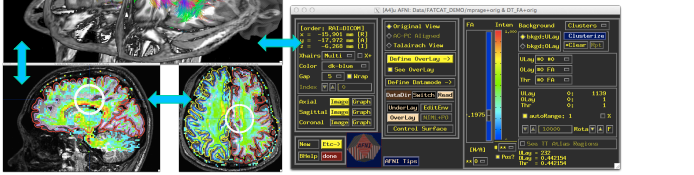
Graph edge/node or matrix cell/row selection
 (select node, or ROI label to see corresponding matrix row/column)

Edge/cell thresholding and coloring as with voxel data

Anatomical Connectivity with FATCAT

Whole brain deterministic, mini probabilistic, and probabilistic DTI & HARDI tractography

Matrices, graphs, surfaces, volumes, & tracts selectable / direct link to vol. space in AFNI

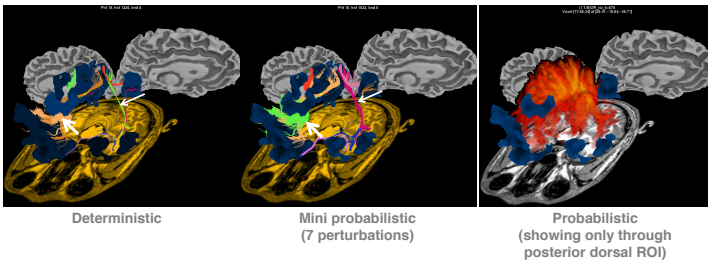


Interactive multi mask placement for tract selection, with arbitrary boolean mask algebra and automatic color coding.

Masks can be moved in 3D on tracts, surfaces, or slices in AFNI.

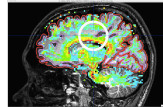
Fast multi-network deterministic, mini probabilistic, and probabilistic tractography
 Full probabilistic execution time ~25 mins for 4 multi-ROI networks

Example tractography through DMN network (see Taylor et al. [1] and Poster 2154 Mon. 12:45)



Interactive Simultaneous Functional & Anatomical Connectivity

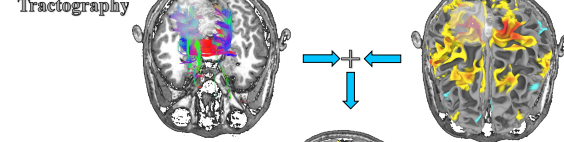
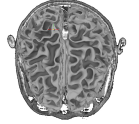
Position Seed in AFNI or SUMA [2,3]
 (on any visualized object, including pried surfaces)



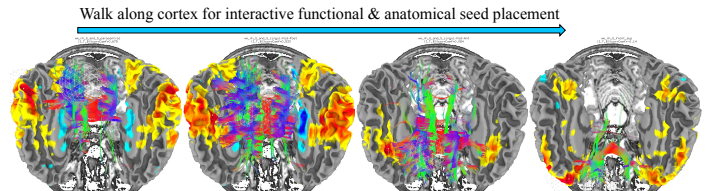
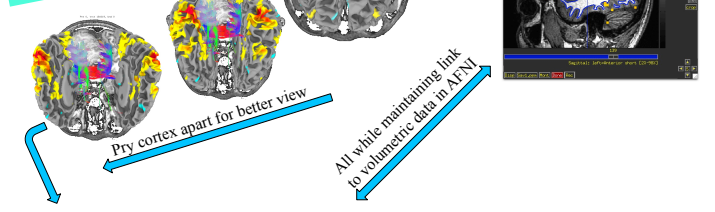
InstaTract
 (boolean seed mask operations on deterministic or mini probabilistic tracts)

InstaCorr
 A life altering experience
 compute whole brain RS correlations

(Data best preprocessed with ANATICOR using afni_proc.py pipeline. [4,5,6]. Basic preprocessing also available in interactive interface)



Live Demo
 Thu. 12:45-2:45pm



Multivariate Group Level Inference

Classic AFNI Level-II programs can be used on connectivity matrices
 New 3dMVM can test hypotheses of multivariate connectivity measures
 (see Chen et al. [7] and Poster 3606 Wed. 12:45)

- REFERENCES:
 [1] Taylor PA, Saad ZS (2013). Brain Connectivity. [2] Cox RW (1996). Comput Biomed Res. [3] Saad ZS, Reynolds RC (2012). Neuroimage. [4] Jo et al. (2013) JAM. [5] Jo et al. (2010) Neuroimage. [6] Saad et al. (2013) Brain Connectivity. [7] Chen G, et al. (2014) Neuroimage reviewer 1 permitting.

THIS POSTER

Poster #3543
 June 12th 2014 @ 12:45pm



RELATED MATERIAL

saadz@mail.nih.gov
 http://afni.nimh.nih.gov/pub/dist/HBM2014

