**The unique cytoarchitecture and wiring of the human default mode network**

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Chart

Description automatically generated

**External data**

* BigBrain – prfiles and atlases (<https://github.com/caseypaquola/BigBrainWarp>)
* Yeo2011\_7Networks\_N1000 (https://github.com/ThomasYeoLab/CBIG/blob/master/stable\_projects/brain\_parcellation/Yeo2011\_fcMRI\_clustering/1000subjects\_reference/Yeo\_JNeurophysiol11\_SplitLabels/fsaverage5/label/)
* economo (<http://www.dutchconnectomelab.nl/economo/>)

**Internal data**

* Preprocessed group-level matrices used in this project are provided in the repository
* Additional pre-transformed atlases on BigBrain

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| **Core scripts** | **Dependencies** | **Input** | **Output** |
| 01\_cytoarchitecture.m | * DMN github * BigBrainWarp (github) * micaopen (github) * freesurfer matlab * gifti matlab * BrainSpace (github) | * Functional and cytoarchitectural atlases (\*h.Yeo2011\_7Networks\_N1000.annot, \*h.economo.annot) * BigBrain profiles (tpl-bigbrain\_desc-profiles.txt) | * Downsampled BigBrain surface mesh (downsample\_bigbrain\_100k.mat) * Data-driven cytoarchitectural axis on BigBrain (bigbrain\_embedding\_100k\_thresh.mat) * tpl-bigbrain\_hemi-\*\_desc-DMN.txt) * BigBrain profile features by data-driven axis (bigbrain\_features.mat) * BigBrain profile features by subnetworks * (bigbrain\_features\_subdmn.mat) * Data-driven axis and economo type assignments within the DMN (bigbrain\_embedding\_type.csv) * Data-driven axis and subregion assignments within the DMN (bigbrain\_gradient\_regions.csv) * Roughness parameters and flatmap coordinates for subregions (subregion\_parameters.mat) |
| random\_forest.py | * numpy * sklearn * scipy | * BigBrain profile features (bigbrain\_features.mat) | * Feature importance (random\_forest.csv) |
| bigbrainwarpping.sh | * BigBrainWarp full installation | * Economo atlas on fsaverage (\*h.economo.annot) * Schaefer atlas on fsaverage (\*h. rh.Schaefer2018\_400Parcels\_7Networks\_order.annot) * DMN probability map on fsaverage * Data-driven cytoarchitectural axis on BigBrain (tpl-bigbrain\_hemi-\*\_desc-DMN.txt) * DMN subnetworks on fs\_LR (tpl-fs\_LR\_hemi-\*\_desc-HCP\_Kong\_group.txt) | * Economo atlas on BigBrain * Schaefer atlas on BigBrain * DMN probability map on BigBrain * Data-driven cytoarchitectural axis on fsaverage * DMN subnetworks on fs\_LR * (see BigBrainWarp for naming conventions) |
| subnetwork\_classification.py | * numpy * sklearn * scipy | * BigBrain profile features by subnetworks * (bigbrain\_features\_subdmn.mat) | * Accuracy of subnetwork prediction (bigbrain\_subdwn\_pred.mat) * Feature importance in subnetwork prediction (bigbrain\_subdwn\_pred\_loo.mat) |
| 02\_navigation.m | * DMN github * BigBrainWarp (github) * micaopen (github) * freesurfer matlab * gifti matlab | * Group-level matrix of diffusion-based tractography (mics\_tractography\_sch400.mat) * Functional and cytoarchitectural atlases (\*h.Yeo2011\_7Networks\_N1000.annot, \*h.economo.annot) * Data-driven cytoarchitectural axis (bigbrain\_embedding\_100k\_thresh.mat) |  |
| run\_rDCM.m | * tapas |  |  |
| 03\_DCM.m | * DMN github * BigBrainWarp (github) * micaopen (github) * freesurfer matlab   gifti matlab |  |  |
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