Session 5 assignment

Due by: 02/17/16 start of lab, printed OR e-mail (to: bauera@cmu.edu)

<div align="center">(Use subject heading with "brain imaging lab" in it)</div>

Purpose: To introduce you to examining, reporting, and interpreting brain activation results of SPM condition contrasts (using the GLM model)

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1) Anatomically describing brain activation [*6 pts. per row in table*]

Here, you will provide a whole-brain description of *positive* brain activation for *one* object category of your choice (choose from one of the three below). Generate the contrast image using spm, using the "companion" file off Blackboard to get your vector of multipliers. Then, view the contrast image in xjview, first by loading the correct file in xjview (it will be called spmT_000*X*.img, where *X* corresponds to the *X*th contrast as seen in slide 16). Display the image using cluster size = 10, pValue = 0.005, Only+, and Render View (old) as in slides 20-21.

[Vegetables, Furniture, Man-made]

In the table below, *first indicate what object category you chose (first row)*. Then, report three different clusters of positive activation for your chosen category. Choose each cluster from a different lobe. Report the following for each cluster: (1) a coordinate found somewhere in that cluster; (2) the brain region associated with that coordinate (report the AAL name in xjview); (3) the lobe of the cluster; and (4-6) whether, *relative to that lobe*, the cluster is in the inferior or superior portion of that lobe, anterior or posterior, and medial or lateral.

NOTE: For this whole assignment, you do *not* need to examine negative brain activation

State object category →								
	x	*y*	*z*	**AAL brain region**	**Lobe**	**Inferior or superior?**	**Anterior or posterior?**	**Medial or lateral?**
a								
b								
c								

2) Reporting anatomical details about specific clusters [*3 pts. per row*]

Now, re-visit each of the clusters above (a-c) by first selecting the cluster in xjview, and then displaying anatomical details about the cluster (see slide 22 for guidance). (You can manually enter your coordinates above into xjview to ensure that you get back to each of the clusters.) Then report the requested anatomical information below.

	AAL brain region with most voxels	**Number of voxels in *this* AAL region**	***Total* number of voxels in cluster**
a			
b			
c			

<div align="center">1</div>

3) Functionally interpreting brain activation [*7 pts.*]

Generate and then examine the *positive* activation for the *Tools vs. others* contrast. Locate *one* cluster in an AAL brain region (or a cluster that has voxels from more than one region) that makes sense to you in terms of *why* it activates during thinking about tools. That is, what do you know about this brain region's function (or brain regions' functions) that makes it likely to activate during thinking about tools? (Hint: What are some important attributes of tools and how do we interact with tools?) *You may use relevant seminar readings or lab slides for this question.*

First, report a coordinate within your chosen cluster, and then list all the AAL brain regions that are displayed when you look at the detailed anatomical breakdown of the cluster (see slide 22 for guidance). Then answer the question about functionally interpreting activation.

x	*y*	*z*	All AAL brain regions part of the cluster (one or more)

Why is this cluster likely to activate during thinking about tools?

Your answer here…

FYI: Expansions of AAL abbreviations in xjview	
L	*Left*
R	*Right*
Sup	*Superior*
Inf	*Inferior*
Mid	*Middle*
Ant	*Anterior*
Post	*Posterior*
Supp	*Supplementary*
Orb	*Orbital*
Oper	*Operculum*
Tri	*Triangularis*
Also: Heschl gyrus is the primary auditory cortex	