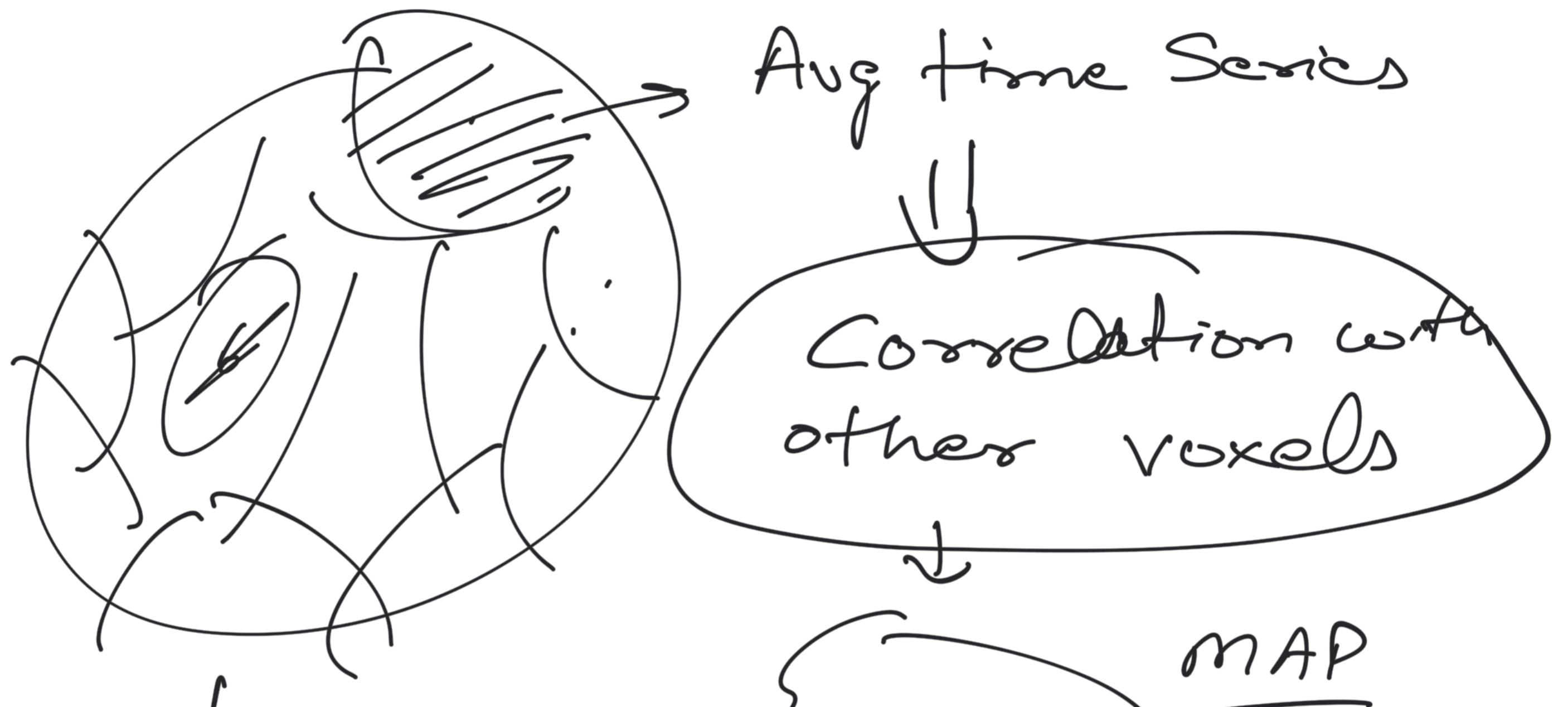


Deepak Singla

1. ISC - Validation on real data  
L + NMF
2. Want to work on Vision data  
(deep learning / NW)

3. Correlation tool box with ROI's

4. Wants to go for higher study  
(NUS / IISc . GPA 8.2)



N ROI's

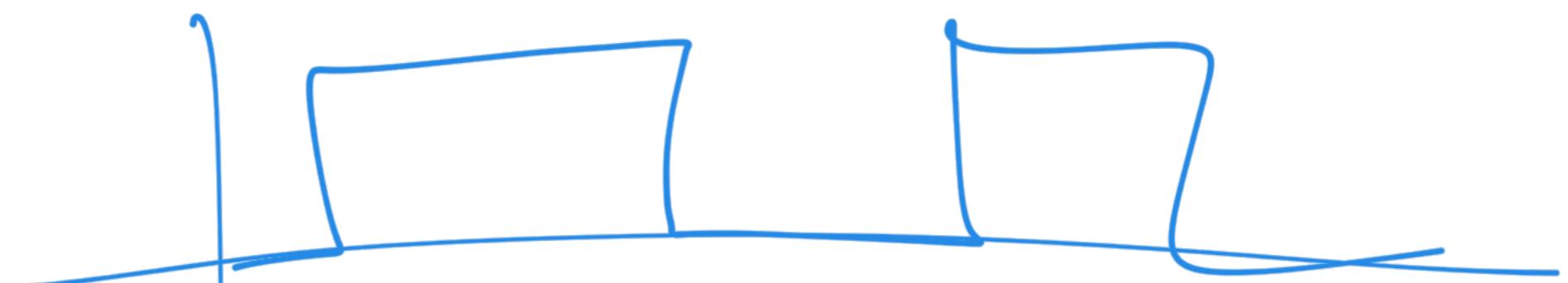
m- maps

FDR Correction

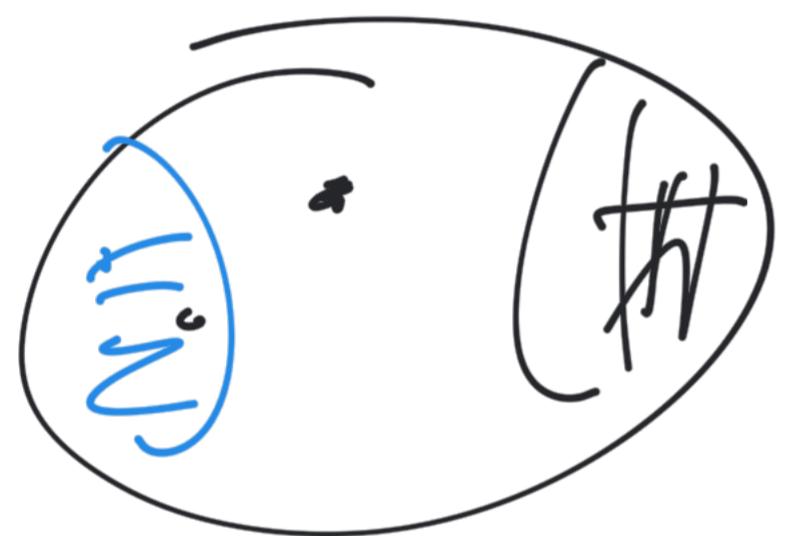
N - Correlation Maps.

N - Group Maps  $\rightarrow$  FDR  $\rightarrow$  FDR cor maps.

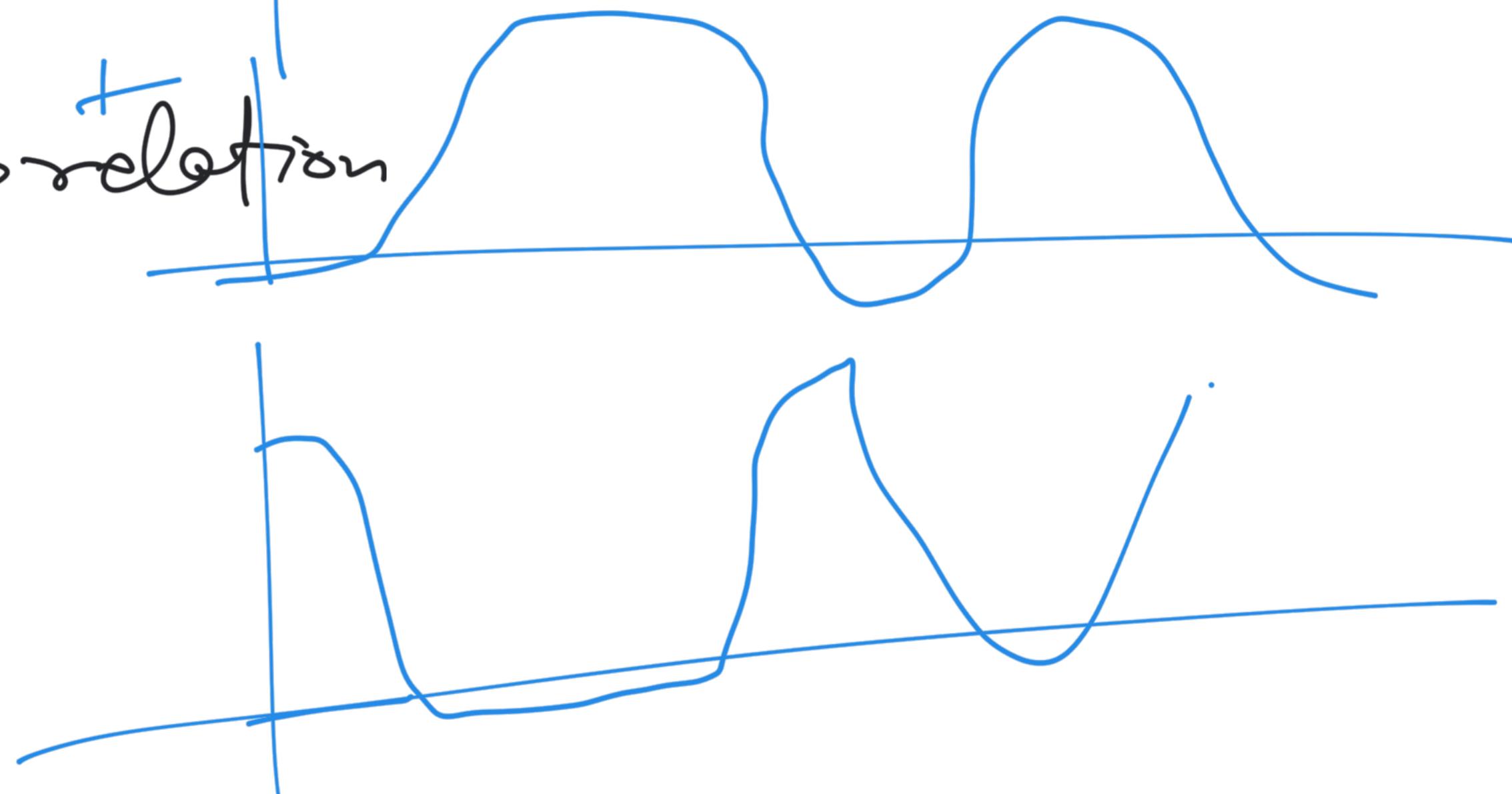
G1, G2



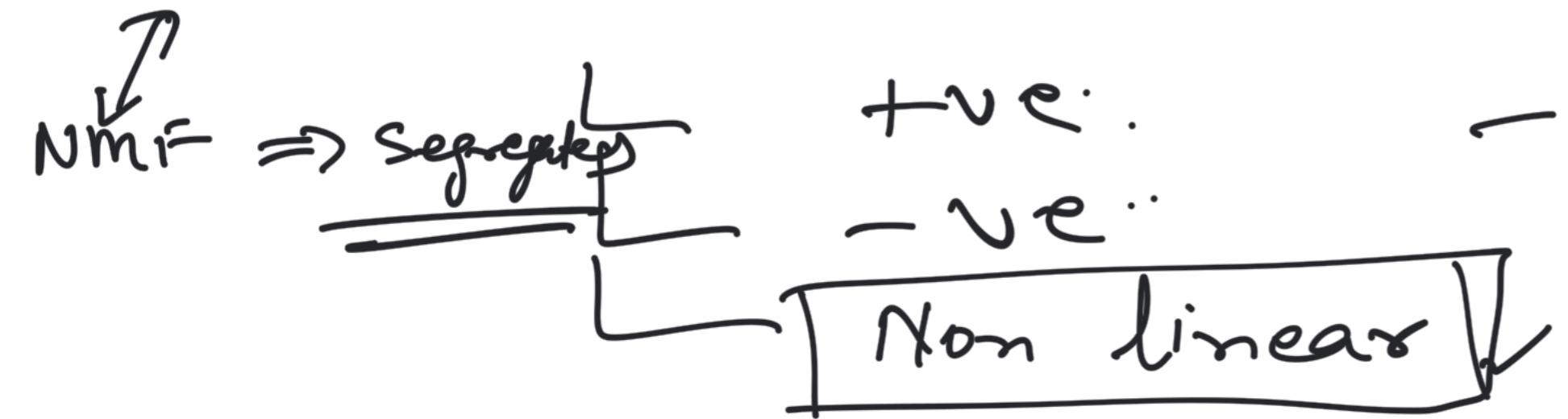
Correlated ~



+ Correlation



ISC → Find correlated regions.



- Multiple Stimulus -  
- Aud  
- Visual

## CORREL TOOL      BAR

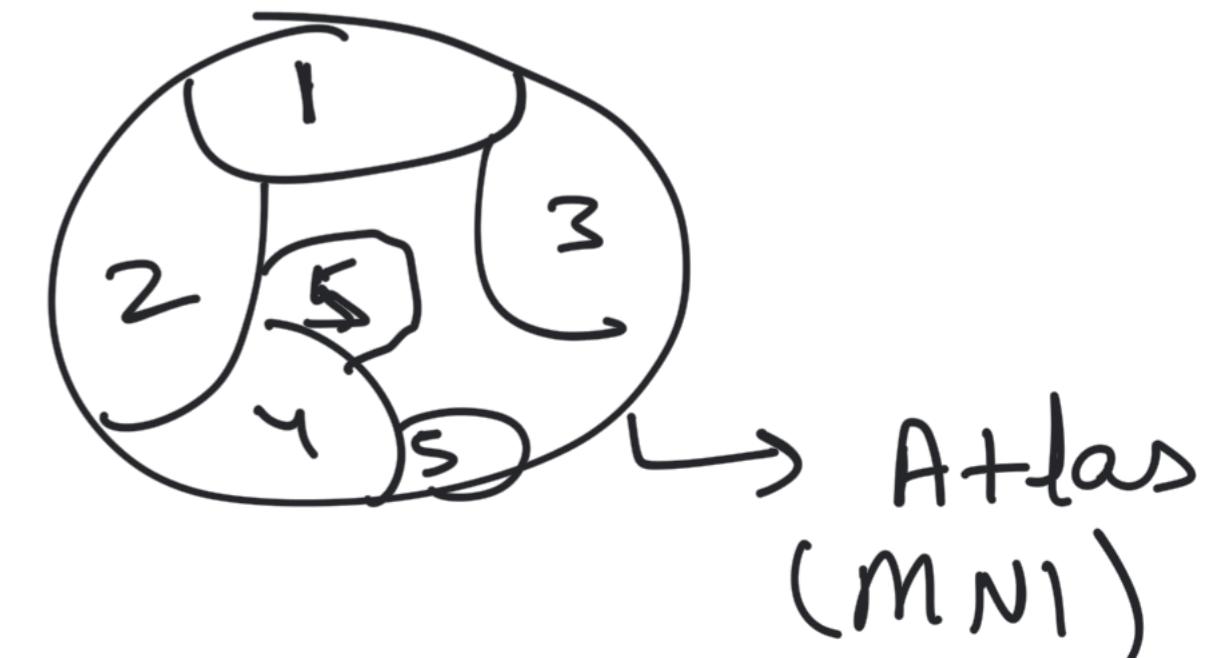
1. Read the ISC Paper
2. Download the ISC toolbars & Play
3. Toolbars design

Input : ① fMRI Data for 2 groups  
( generalize to n-groups?)

② & structural data.

③ ROI's file - 6-ROIs.

Output: (a) P-val  
map files



- (a)  $\gamma$  - P-val map files
- (b)  $\gamma$  correlation difference files
- (c)  $\gamma$  q-val map files (multiple FDR correction in one go).

## △ Correlation (Assume FSL)

1. Register functional → structural  
Create - omat files
2. Structural to atlas
3. ROI's to functional of  
each subject (NN interp)
4. Correlation Maps for each  
subject (Arkita's tool)
5. Register correlation maps to  
atlas  
Calculate DC on registered maps
6. → 4D file output.

# P-Value Map files.

1. Do steps 1-5 as before.  
1.5 - Stat. test to be performed as an option
2. Transform correlations using  
Fisher transform

Types of tests

(a) T-test  $\rightarrow$  Assumes  
Normal  
 $\downarrow$   
Fisher Tx. of Correl.

Others  
Norm  $\xrightarrow{\text{t-test}}$

(b) Non-parametric + test  
(Signed Wilcoxon)

Store

$$\boxed{\text{sign}(\Delta C) * (-\log_{10}(P))}$$

$$(C_{G_2} - C_{G_1})$$

0.01



$$-2 \Rightarrow \frac{G_2 < G_1}{-2}$$

$$z \Rightarrow G_2 > G_1 - \log - \textcircled{2}$$

11  
z

in a map file

4 D file with  $\chi$ -volumes.

## Q-value files

FDR  $\rightarrow$  Convert P to q-value.

But now we have  $\gamma$ -maps.

All of the maps need to be examined together.

Each map has  $V$  voxels.

Now  $\gamma V$  hyp. tests have happened.

$\hookrightarrow$  FDR on  $\gamma V$  tests.  
4D file. Same convention as in Q-val files.