Pattern analysis

Using CosmoMVPA:
1. ran a LDA decoding searchlight that looks for activation patterns in voxels that are different across the 4 stimulus types. This was done across the whole brain in all voxels.
2. Ran monte-Carlo cluster stats to determine which of the voxels from the searchlight statistically significantly differentiate between stimuli.
3. I created a mask out of those significant voxels from step 2. (Mask at the bottom of page 2)
4. Ran a LDA decoding searchlight, within the newly created mask on first and second session data separately. The results give me information about how patterns of activation differ for each stimulus type within each session. Than we can compare across sessions to determine whether there is a difference in decoding abilities between sessions (as a result of learning).

Result:
For each participant I end up with two pairwise **distance** matrices between stimuli. One for each session.
I take an average across all participants within each session (Figure, top two matrices).
In both sessions, stimuli are discriminable (distances > 0).

Theses are the values pictured in the matrices on page 2
A = a capella, I = instrumental, S = spoken, W = whole

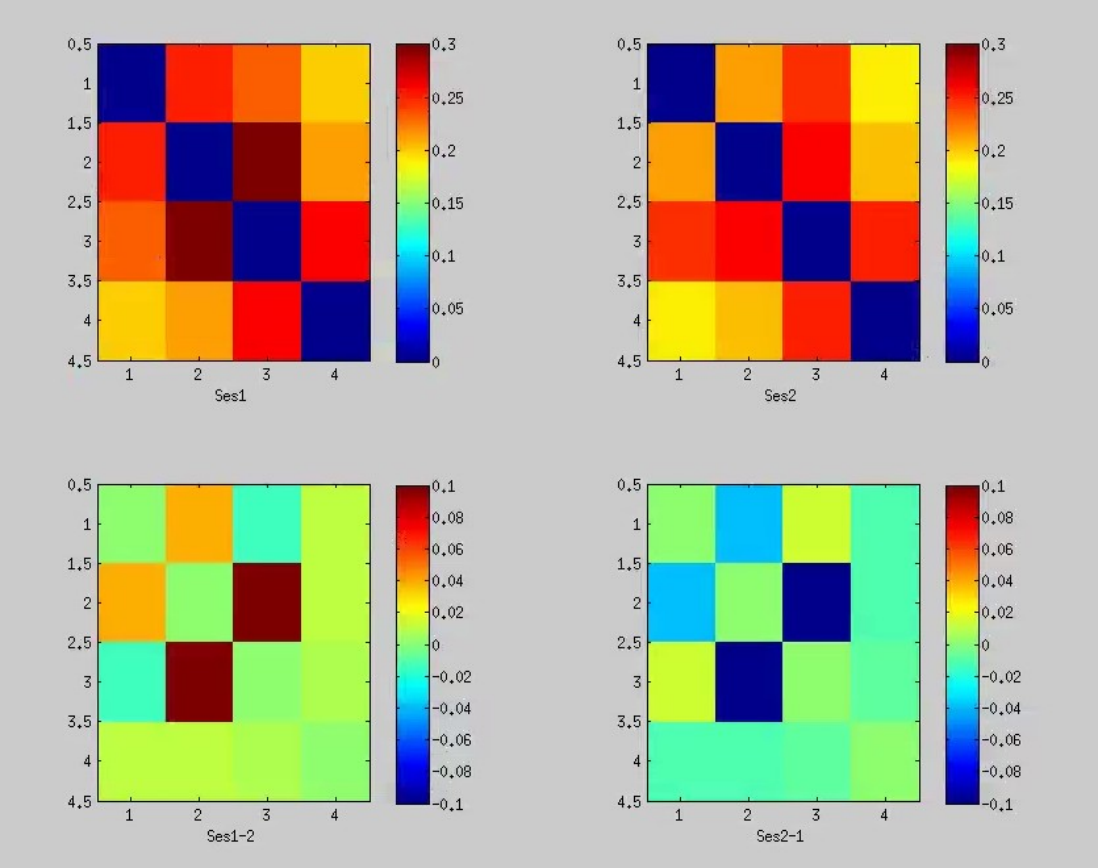
Session 1:	Session 2:
0.25 0.23 0.37 0.20 0.22 0.26	0.21 0.25 0.26 0.18 0.21 0.25
Rank:	**Rank**:
1. S-I (0.37) 2. S-W (0.26) 3. A-I (0.25) 4. S-A (0.23) 5. I-W (0.22) 6. A-W (0.20)	1. S-I (0.26) 2. S-W (0.25) 3. S-A (0.25) 4. A-I (0.21) 5. I-W (0.21) 6. A-W (0.18)

- Session 1 all bigger distances than Session 2 except for the 1-3 distance (A-S)
- All largest differences involve spoken – i.e. Spoken stimuli are most different than all other stim types
- The ranking of differences is largely the same across the two sessions, except the reversal of #3 and #4.

The bottom two matrices in the figure are the difference between the top two (bottom left = Ses 1 – Ses 2, bottom right = Ses 2 – Ses 1).

- The largest changes between the two sessions happen in the differences between Instrumental-Spoken (largest difference) and Instrumental-A capella (3rd/4th largest difference)
- In both cases, the difference gets smaller in the second session.

1= a capella
2= instrumental
3= spoken
4= whole



mask based on whole brain decoding LDA searchlight