

```

clc;
clear;
close all;

% load data
load('AllMatsAllOdors.mat');
load('Corrs_lo3o02.mat')
Corr_diff_o_lo3o02 = CorrMat_stim - Corr_mat_prestim;

diff = zeros(13,426424);
diff(1,:) = Corr_diff_o_lo3o02(logical(tril(ones(922,922),1)));
diff(2,:) = Corr_diff_o_lo3o04(logical(tril(ones(922,922),1)));
diff(3,:) = Corr_diff_o_Acet02(logical(tril(ones(922,922),1)));
diff(4,:) = Corr_diff_o_Acet04(logical(tril(ones(922,922),1)));
diff(5,:) = Corr_diff_o_Bzald02(logical(tril(ones(922,922),1)));
diff(6,:) = Corr_diff_o_Bzald04(logical(tril(ones(922,922),1)));
diff(7,:) = Corr_diff_o_EA02(logical(tril(ones(922,922),1)));
diff(8,:) = Corr_diff_o_EA04(logical(tril(ones(922,922),1)));
diff(9,:) = Corr_diff_o_EB02(logical(tril(ones(922,922),1)));
diff(10,:) = Corr_diff_o_EB04(logical(tril(ones(922,922),1)));
diff(11,:) = Corr_diff_o_MH02(logical(tril(ones(922,922),1)));
diff(12,:) = Corr_diff_o_MH04(logical(tril(ones(922,922),1)));
diff(13,:) = Corr_diff_o_P0(logical(tril(ones(922,922),1)));

% create labels
labels = {...
    'lo3o'; 'lo3o'; ...
    'Acet'; 'Acet'; ...
    'Bzald'; 'Bzald'; ...
    'EA'; 'EA'; ...
    'EB'; 'EB'; ...
    'MH'; 'MH'; ...
    'P0';
};

% do pca
[coeff, score, latent,~,explained] = pca(diff);

% plot scree plot
figure;
scatter(1:12,explained);
title('Principal Component Variances (Stim - Prestim)');
xlabel('Principal Component');
ylabel('% Variance');

figure('Position',[0,0,1000,500]);
scatter(score(1:2:12,1),score(1:2:12,2));
hold on;
scatter(score(2:2:12,1),score(2:2:12,2));
scatter(score(13,1),score(13,2));
for i=1:13
    text(score(i,1),score(i,2),labels{i},'FontSize',6);
end

xlabel('First Principal Component');
ylabel('Second Principal Component');
legend({'02 Conc.','04 Conc.','P0'],'Location','southwest');
title('PCA on Corrmats Diff. (Stim - PreStim)')

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