Clustering Code

```
%% Read input file
coverType = readtable("Covertype.csv");
% stats = coverType(:,[1:10 55]); %exclude widerness and soil types
columns
stats = coverType;
stats = table2array(stats);
statsNorm = normalize(stats);

%% Correlation matrix

V = cov(stats);
STD = zeros(55,1);
for i = 1:55
    STD(i) = sqrt(V(i,i));
end

for i =1:55
    for j = 1:55
        Correlations(i,j) = V(i,j)./(STD(i)*STD(j));
    end
end

%% K means Clustering

%kmeans on StatsNorm to 3 group
grp = kmeans(statsNorm,3,"Replicates",10)
[pcs,scrs,~,~,pexp] = pca(statsNorm)
pareto(pexp);
scatter3(scrs(:,1),scrs(:,2),scrs(:,3),10,grp);

%% Gaussian Mixture Model clustering

mdl = fitgmdist(statsNorm,3,"Replicates",5,"RegularizationValue",0.02)
[grp,~,gprob] = cluster(mdl,statsNorm)
[pcs,scrs,~,~,pexp] = pca(statsNorm)
pareto(pexp)
scatter3(statsNorm(:,1),statsNorm(:,2),statsNorm(:,3),15,grp)
```