Alexandria University
Faculty of Engineering
Computer and Communications Program

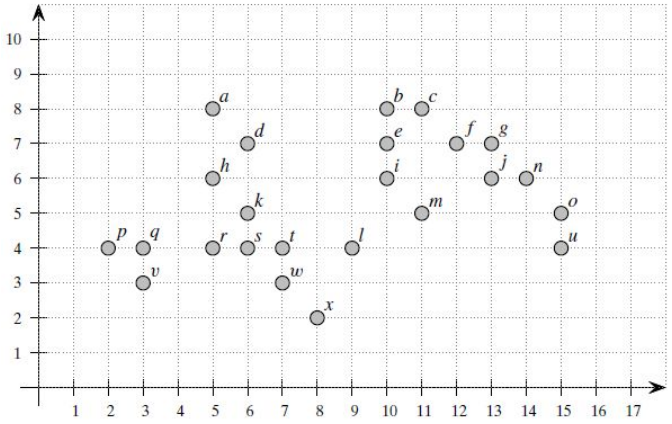
Due : Sunday 17/3/2019

CCE :Pattern Recognition

Sheet#4 Clustering Evaluation

Submit a report Report is essential. Detailed steps are required. Final answers will not be marked.

1. **Perform clustering on the following data**
   a. Using Kmeans: set K=2,3,4,5,6. Report different clustering results.
   b. K-ways normalized: cut k=2,3,4,5,6
      i. Use RBF kernel with gamma = {0.01,0.1}. Report the Report different clustering results.
      ii. Use Similarity graph as the {3,5}-NN graph. Where Sim(xi,xj)=1 iff xj is one of the nearest three points to xi (or vise versa). Report different clustering results.
   c. Assume the ground truth clustering results is T1={p,q,v}, T2={a,d,h,k,r,s,t,l,w,x} and T3={b,c,e,i,m,f,g,j,n,a,u}.
      i. Compute the external measures we studied such as
         1. Conditional Entropy
         2. Purity
         3. Pairwise measures (Jaccard and Rand index)
         4. Max matching when number of clusters =3.
         5. F-Measure
      ii. Compute the internal measures we studied. You will need the proximity matrix before proceeding.
         1. BetaCV
         2. Normalized-Cut
   d. Summarize your finding using graphs, tables and comment on what you obtain
      i. Compare parameter setting for every algorithm
      ii. Compare between different algorithms results



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