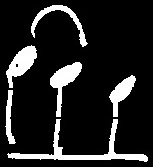
1. Staff-lines of 50 documents are removed.
2. Components are extracted and filtered manually.
3. Zernike feature extracted from 7079 components
4. Components are clustered to 20 clusters using k-means, cluster centres are calculated.  
   I have changed cluster to 20, because using mean of best matching vectors were giving too much extra matches. 20 clusters is giving much better output.
5. A text image and a query image is given  
   Query :   
   Text : 
6. The components of query and text image are extracted and its Zernike features are extracted.  
   Query : D:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\QUERY_COMPONENT\A\00000.jpgD:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\QUERY_COMPONENT\A\00001.jpgD:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\QUERY_COMPONENT\A\00002.jpgD:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\QUERY_COMPONENT\A\00003.jpgD:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\QUERY_COMPONENT\A\00004.jpg  
   Text : D:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\TEXT_COMPONENT\A2\00000.jpgD:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\TEXT_COMPONENT\A2\00001.jpgD:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\TEXT_COMPONENT\A2\00002.jpgD:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\TEXT_COMPONENT\A2\00003.jpgD:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\TEXT_COMPONENT\A2\00004.jpgD:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\TEXT_COMPONENT\A2\00005.jpgD:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\TEXT_COMPONENT\A2\00006.jpgD:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\TEXT_COMPONENT\A2\00007.jpgD:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\TEXT_COMPONENT\A2\00008.jpgD:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\TEXT_COMPONENT\A2\00010.jpg \*D:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\TEXT_COMPONENT\A2\00013.jpgD:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\TEXT_COMPONENT\A2\00014.jpgD:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\TEXT_COMPONENT\A2\00016.jpgD:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\TEXT_COMPONENT\A2\00017.jpgD:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\TEXT_COMPONENT\A2\00019.jpgD:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\TEXT_COMPONENT\A2\00020.jpgD:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\TEXT_COMPONENT\A2\00021.jpgD:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\TEXT_COMPONENT\A2\00022.jpgD:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\TEXT_COMPONENT\A2\00023.jpgD:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\TEXT_COMPONENT\A2\00024.jpgD:\My Documents\Study Rakesh\My Projects\Musical Document Retrieval\DATA\TEXT_COMPONENT\A2\00025.jpg  
   \*This component is still broken, I think it has too much gap.  
   (The error I did was I was storing the whole bounding box, instead of only the pixels)
7. Nearest cluster sequences are created for both text and query by Euclidean distance between Zernike features of each component from cluster centre.  
   Query sequence : 18 8 15 8 8  
   Text Sequence : 10 14 14 11 11 11 11 11 11 0 11 4 10 11 11 8 10 11 2 8 11 15 18 10 11 11
8. Cost matrix σ is calculated by  
   σ(i, j) = Euclidian\_Distance(  
    mean of 3 cluster centre vectors nearest to ith component of query,   
    mean of 3 cluster centre vectors nearest to jth component of text  
    ) / maximum distance between each pair of centres  
   I used weighted mean as straight mean was giving too much wrong matches.  
   mean(m0, m1, m2)=(5\*m0+3\*m1+m2)/6 , where m0 is best match
9. ASM used with cost matrix to match sequences, match up to edit distance 1.0 are taken.  
   Match occurred at :

|  |  |  |
| --- | --- | --- |
| **Position** | **Edit Distance** |  |
| 0 to 4 | 0.407505 | ✔ |

Match : 

Segmentation Steps:

1. Dilate in 4 iteration
2. Extract components
3. Filter out very small components
4. Join vertically 75% overlapping same sized parts
5. Join small parts below or over long parts
6. Join parts with overlapping bounding box.
7. Filter parts with height/width>=5