LDRP Institute of Technology and Research, Gandhinagar

Machine Learning: Tools, Techniques and Applications

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Algorithmic Steps for LDA:

Training Phase:

Step 1: Load face vectors in variable X

Step 2: Find mean m_i of each class i

Step 3: Find mean m of all the class

Step 4: Find within class scatter Sw: $S_w = \sum_{i=1}^{C} S_i$, where $S_i = \sum_{x \in \omega_i} (x - m_i)(x - m_i)^T$

Step 5: Find between class scatter Sb: $S_b = \sum_{i=1}^{C} n_i (m_i - m)(m_i - m)^T$

Step 6: Find eigen vectors V of $S_w^{-1} S_b$

Step 7: Select first C – 1 eigenvector V = V(:, 1:C-1)

Step 8: Find features of training images by projecting X on V: TrnFV = X^T * V

Test Phase:

Step 1: Read test image vector T

Step 2: Find features of test image by projecting t on V: TstFV = T^T * V

Step 3: Find euclidean distance between training feature vector TrnFV and test feature vector TstFV

Step 4: Find minimum distance and index

Step 5: Check the recognized image and test image.