

Supervised Dimensionality Reduction Techniques

PCA & SVD are unsupervised dimensionality reduction techniques whereas, Fisher's Linear Discriminant (FLD) is supervised.

In this assignment, you are required to understand supervised dimensionality reduction techniques like FLD (a type of Linear Discriminant Analysis (LDA)), Metric Learning etc.

You are required to understand and implement 2 Supervised Dimensionality Reduction Techniques (FLD – for multiple classes & Metric Learning)

For a few selected classification applications, apply both supervised & unsupervised dimensionality reduction techniques and compare the results. Report your findings.

You need to submit a handwritten report covering all theoretical aspects of supervised dimensionality reduction.

Implementation – Preferably in C, or in R.

Group Information – Max. 3 students per group (with documented work division among group members – differential marking is applicable). It is strongly recommended that every member of the group should develop an understanding of the entire assignment and not just of the part he/she is responsible for.

Deliverable 1 (due date: 14th March) – Group Information, work division, identification of classification applications and datasets (submit a single handwritten page) [2 marks]

Deliverable 2 (due date: 31st March) – Final handwritten report (covering all theoretical aspects) and implementation details. [18 marks].

Theoretical rigor and understanding will fetch you credits. Good implementation of algorithms/techniques will also help you in scoring well.