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NON-LINEAR KERNEL FISHER DISCRIMINANT ANALYSIS WITH APPLICATION

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ABSTRACT

Linear Discriminant Analysis (LDA) is a traditional statistical method which has proven successful on classification and dimensionality reduction problems [(5)]. The procedure is based on an eigenvalue resolution and gives an exact solution of the maximum of the inertia but this method fails for a nonlinear problem.

To solve this problem used kernel Fisher Discriminant analysis (KFDA), carry out Fisher linear Discriminant analysis in a high dimensional feature space defined implicitly by a kernel. The performance of KFDA depends on the choice of the kernel.

In this paper, we consider the problem of finding the optimal solution over a given linear kernel function for the two primal and dual variable in Fisher Discriminant, this by taking a small sample 20 case about HIV disease by taking three factors (Age, Gender, number of Lymphocyte cell) with two level to clear how these observations classified by testing this classified using statistic (Rayleigh Coefficient).

KEYWORDS: Linear Fisher Discriminant, Kernel Fisher Discriminant, Rayleigh Coefficient, Cross-Validation, Regularization