

**HETEROSCEDASTIC DISCRIMINANT ANALYSIS**

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## ABSTRACT

Heteroscedastic discriminant analysis (HDA) is a technique that maximizes the class discrimination in the projected space, similar to Fisher's linear discriminant (LDA), without the assumption of equal sample covariances. The description of the algorithm looks promising given the fact that LDA is known to be inappropriate for classes with unequal sample covariances. The authors of the paper define a new objective function, which is an extension of the work done by Kumar Nagendra, that they claim maximizes the class discrimination in the feature space. The authors claim that by using DHDA (HDA under diagonal covariance modelling constraints) and by applying a diagonalizing linear transformation (MLLT) to the DHDA space they obtained a 10%-13% relative improvement in the word error rate on the Switchboard and Voicemail databases. It is had not be skeptical about the authors claims given that they themselves say that, "HDA alone degrades the recognition performance". After reading this review I hope you will come to the same conclusion as I did that HDA by itself does not provide any improvements in recognition performance. You will also find that the authors experiments on the Switchboard and Voicemail databases leave questions to be answered as to why DHDA performs better than HDA and why MLLT was not described in greater detail.