A novel discriminant minimum class locality preserving canonical correlation analysis and its applications.

Summary: Canonical correlation analysis (CCA) is a well-known technique for simultaneously reducing two relevant data sets, and finding maximal correlation between them. However, it fails to preserve the local structure of each data set, as well as the global discriminant ability, which are important in real applications. In this paper, a new CCA model, called discriminant minimum class locality preserving canonical correlation analysis (called as DMPCCA) is proposed. The proposed method introduces local structure information and global discriminant information into the classical CCA and considers an optimal combination of intra-class locality preserving, global discriminant ability and the maximal correlation between two sets. The experiments on data visualization, web image retrieval and face recognition validate the effectiveness of the proposed method.

Keywords: canonical correlation analysis; locality preserving; global discriminant; dimensionality reduction