

OPTIMIZATION METHOD AND SYSTEM FOR SUPERVISED LEARNING UNDER TENSOR MODE

ABSTRACT

Optimization method and system for supervised learning under tensor mode is provided; wherein the method includes: receiving an input training tensor data set; introducing a within class scatter matrix into an objective function such that between class distance is maximized, at the same time, within class distance is minimized by the objective function; constructing an optimal frame of the objective function of an optimal projection tensor machine OPSTM subproblem; constructing an optimal frame of an objective function of an OPSTM problem; solving the revised dual problem and outputting alagrangian optimal combination and an offset scalar b ; calculating a projection tensor W_* ; calculating an optimal projection tensor W ; by the W together with the b , constructing a decision function; inputting to-be-predicted tensor data which has been rank-one decomposed into the decision function for prediction. This overcomes issues such as curse of dimensionality, over learning and small sample occurred when vector mode algorithms process the tensor data, and effectively avoids a time-consuming alternative projection iterative process of the tensor mode algorithms of the prior art.

Fig.1