

STATISTICAL ANALYSIS AND DATA MINING

Original Article

Semi - supervised logistic discrimination via labeled data and unlabeled data from different sampling distributionsShuichi Kawano 

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Abstract

This article addresses the problem of classification method based on both labeled and unlabeled data, where we assume that a density function for labeled data is different from that for unlabeled data. We propose a semi - supervised logistic regression model for classification problem along with the technique of covariate shift adaptation. Unknown parameters involved in proposed models are estimated by regularization with expectation and maximization (EM) algorithm. A crucial issue in the modeling process is the choices of adjusted parameters in our semi - supervised logistic models. In order to select the parameters, a model selection criterion is derived from an information - theoretic approach. Some numerical studies show that our modeling procedure performs well in various cases. © 2013 Wiley Periodicals, Inc. Statistical Analysis and Data Mining, 2013

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