Margin Knowledge Per Example Using Support Vector Machines

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Abstract

In this report, we propose a method called φ support vector classification (φ-SVC) for incorporating knowledge about margin of an example for classification and regression problems. We propose two applications for φ-SVC: decreasing the generalization error of reduced models while preserving the similar number of support vectors, and incorporating the nonlinear constraint of a special type to the problem. The method was tested for support vector machines (SVM) classifier and ε-insensitive support vector regression (ε-SVR). Experiments on real world data sets show decreased generalization error of reduced models for linear and polynomial kernels.