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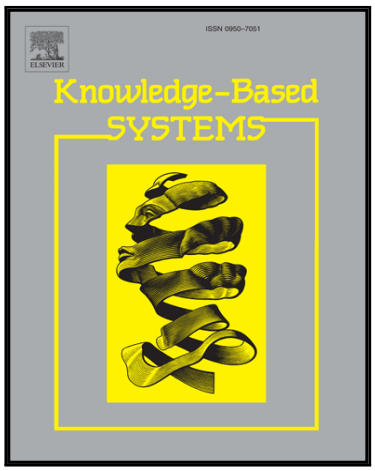

Least absolute deviation-based robust support vector regression

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Least absolute deviation-based robust support vector regression

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Abstract: To suppress the influence of outliers on function estimation, we propose a least absolute deviation (LAD)-based robust support vector regression (SVR). Furthermore, an efficient algorithm based on the split-Bregman iteration is introduced to solve the optimization problem of the proposed algorithm. Both artificial and benchmark datasets are employed to compare the performance of the proposed algorithm with those of least squares SVR (LS-SVR), and two weighted versions of LS-SVR with the weight functions of Hampel and Logistic, respectively. Experiments demonstrate the superiority of the proposed algorithm.

Keywords: support vector regression; robust; outlier; least absolute deviation

1. Introduction

Support vector machine (SVM) initially proposed by Cortes and Vapnik [1, 2] has become a popular tool for solving classification and regression estimation problems [3-6]. Rather than by solving a non-convex, unconstrained minimization problem as in standard neural network training techniques, SVM solutions are found by solving a

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