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# Transductive Support Vector Machines Using Simulated Annealing

Fan Sun, Maosong Sun

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## Abstract

Transductive inference estimates classification function at samples within the test data using information from both the training and the test data set. In this paper, a new algorithm of transductive support vector machine is proposed to improve Joachims' transductive SVM to handle various data distributions. Simulated annealing heuristic is used to solve the combinatorial optimization problem of TSVM, in order to avoid the problems of having to estimate the ratio of positive/negative samples and local optimum. The experimental result shows that TSVM-SA algorithm outperforms Joachims' TSVM, especially when there is a significant deviation between the distribution of training and test data.



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### Transductive Support Vector Machines Using Simulated Annealing

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#### 1 Introduction

Support vector machines (SVM) has popularity due to many attractive (2ER). Most current works on SVM over all possible future test data, in most cases, it is neither possible samples. In fact, only a particular observation leads to the concept of the test data in problem formulation problems with insufficient labeled data. Transductive support vector machines transductive learning in the often achieves a high performance.

This paper tries to find a more practical transductive inference solution for support vector classification applications. An algorithm combining transductive support vector machine with simulated annealing (TSVM-SA) is designed to implement

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