

数学与系统科学研究院

计算数学所学术报告

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报告题目:

**Nonparallel Support Vector Ordinal
Regression**

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报告时间: **2015 年 10 月 20 日(周二)**

下午 15:30-16:30

报告地点: 科技综合楼三层

311 报告厅

Abstract:

In this work, we propose a novel ordinal regression model, called nonparallel support vector ordinal regression (NPSVOR), for a type of multiple classification problems where each instance is associated with an ordinal label. Our NPSVOR is different from the existing ordinal regression models completely, such as the support vector ordinal regression (SVOR) and the reduction support vector machine (Red-SVM). For each class, we find one hyperplane that the patterns or data samples of each class lie in the close proximity of this hyper-plane and maintain clear separation with other closed class(es). This model has several characteristics: 1) All hyperplanes are nonparallel. 2) The hyperplanes are solved by several independent small scale sub-optimization model distributively. 3) The model can degenerate to the nonparallel support vector machine for binary ordinal regression. We also develop an efficient solver for training NPSVOR based on alternating direction method of multipliers. The algorithm is faster and more suitable for large scale problems than the popular SMO algorithm. The results of numerical experiments on some benchmark and real-world data sets, including applications of ordinal regression to information retrieval and collaborative filtering, verify the usefulness of these approaches. The model has obvious advantages than traditional methods in accuracy and CUP time.

(This is a joint work with Huadong Wang, Yingjie Tian and Yong Shi.)

欢迎大家参加！