The study of sequential minimal transductive support vector machine

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ABSTRACT
Support Vector Machine (SVM) is a novel machine learning algorithm based on the statistical learning theory. SVMs obtain high performance in real-world applications and are used as one of the standard tools for machine learning and data mining. There are, however, still problems whenever data is rare or difficult to collect. Moreover, the data is likely to change over time. Currently, there are many variants of SVMs were purposed. The Sequential Minimal Transductive Support Vector Machine (SMTSVM) is one of them. Two key points of SMTSVM are updating Lagrange coefficients of two inconsistent patterns and estimating empirical risks value for the whole data. If the empirical risk decreases, we change the label of the inconsistent pattern with the greatest slack value. Otherwise, we increase regularization parameters and retrain the complete data set. In order to investigate the efficiency and effectiveness of the SMTSVM, simulations of linear, non-linear data, and USPS data set are carried out to compare with Transductive SVM (TSVM), Progressive TSVM (PTSVM), and Online TSVM (OTSVM).

Keywords : Support Vector Machine、Transductive Support Vector Machine、Sequential Minimal Transductive Support Vector Machine

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