

Robust Machine Learning Optimization Models with Data Uncertainties

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Abstract

This talk presents robust chance-constrained support vector machines (SVM) with second-order moment information and obtains equivalent semidefinite programming (SDP) and second-order cone programming (SOCP) reformulations. Three types of estimation errors for mean and covariance matrix are considered and the corresponding formulations and techniques to handle these types of errors are presented. A method to solve robust chance-constrained SVM with large scale data is proposed based on stochastic gradient descent method to process big data.