Lecture 2.

Robust generalized eigenvalue classifier with ellipsoidal uncertainty

In supervised learning, uncertainty affects classification accuracy and yields low quality solutions. For this reason, it is essential to develop machine learning algorithms able to handle efficiently data with imprecision. In this paper we study this problem from a robust optimization perspective. We consider a supervised learning algorithm based on generalized eigenvalues and we provide a robust counterpart formulation and solution in case of ellipsoidal uncertainty sets. We demonstrate the performance of the proposed robust scheme on artificial and benchmark datasets from University of California Irvine (UCI) machine learning repository and we compare results against a robust implementation of Support Vector Machines.