SVDD Read Me

Brian A. Geier

October 15, 2009

1 Matlab Code

The SVDD algorithm requires a spread parameter for the RBF. The spread parameter needs to be found empirically via a minimax method, originally proposed by Valpnik.

- Main driver
  1. svdd.m
     - Author: Brian A. Geier, Ctr
     - This function takes a HSI data matrix, truth vector, alpha criteria, and radial basis function (RBF) sigma value
     - The sigma value should be determined via a minimax method, see Burlina and Diehl or Tax and Duin paper
     - An outlier position vector is outputted indicated which pixels are anomalous, i.e. 1 - target, 0 - background.
     - This method is supervised, which requires that the truth be provided
     - The Gaussian kernel is used as the RBF
- Support functions
  1. sqeucldistm.m
     - Author: D.M.J. Tax
     - This is a specialized function for computing the squared Euclidean distances D between datasets A and B.
  2. svdd_optrbf.m
     - Author: open-source
     - Performs quadratic optimization for the SVDD