Support vector machines (SVMs), though perfect, are not chosen in applications requiring great classification speed, due to the number of support vectors being large. To conquer this problem we devise a primitive method with the following properties: (1) it decouples the idea of basis functions from the concept of support vectors; (2) it materialistically finds a set of kernel basis functions of a specified maximum size (dmax) to approximate the SVM primitive cost function.
well; (3) it is efficient and roughly scales as \(O(n d_{\text{max}}^2)\) where \(n\) is the number of training examples; and, (4) the number of basis functions it requires to accomplish an accuracy close to the SVM accuracy is usually far less than the number of SVM support vectors.

**References**


**Index Terms**

Computer Science

Information Science

**Keywords**

Support Vectors (svs)  Svms  Classification  Sparse Design.
Constructing Support Vector Machines with Reduced Classifier Complexity