



Simultaneous classifier design and feature selection for pattern recognition in biotechnology

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We introduce an embedded method for feature selection that simultaneously selects relevant features during classifier construction by penalizing each feature's use in the dual formulation of support vector machines (SVM). This approach called kernel-penalized SVM (KP-SVM) optimizes the particular Kernel function eliminating features that have low relevance for the classifier. Additionally, KP-SVM employs an explicit stopping condition, avoiding the elimination of features that would negatively affect the classifier's performance. We performed experiments on four real-world benchmark problems comparing our approach with well-known feature selection techniques. KP-SVM outperformed the alternative approaches and determined consistently fewer relevant features.