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We present a fast projected gradient method (FPGM) for training large dual soft margin support vector machines (SVMs). The FPGM is an augmented Lagrangian method that uses a modification of the fast gradient method with a projection on a box set. The FPGM requires computing only first derivatives, which for the dual soft margin SVM means computing mainly a matrix-vector product. Therefore FPGM being computationally inexpensive may be an attractive alternative to existing quadratic programming solvers for training large SVMs. We discuss convergence of the FPGM and report numerical results for training the SVM with the FPGM on data up to tens of thousands data points from the UC Irvine Machine Learning Repository. (Received January 17, 2015)