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1: Input:  $\mathcal{D} = \{(\mathbf{x}_1, y_1), \dots, (\mathbf{x}_m, y_m)\}$ , tolerance  $\epsilon \geq 0$ , maximum iterations maxiter
2: Features:  $\mathbf{x}_i = (x_{i1}, \dots, x_{in}, 1)$  are augmented with a bias term, labels  $y_i \in \{-1, 1\}$ .
3: Output: Classifier parameters  $\beta = (w_1, \dots, w_n, b)$ 
4:  $\beta \leftarrow \text{rand}$                                 ▷ Initialize parameter vector  $\beta$  to a random vector
5:  $i \leftarrow 0$                                 ▷ Initialize the loop counter to zero
6: while true do                                ▷ Repeat until stopping criterion is met
7:     error  $\leftarrow 0$                         ▷ Initialize the error count to zero for this pass through  $\mathcal{D}$ 
8:     for  $(\mathbf{x}, y) \in \mathcal{D}$  do                    ▷ Iterate over each pair  $(\mathbf{x}, y)$  in data set  $\mathcal{D}$ 
9:         if  $y \cdot (\mathbf{x}^T \cdot \beta) \leq 0$  then        ▷ Ooops! The data pair  $(\mathbf{x}, y)$  is misclassified
10:             $\beta \leftarrow \beta + y \cdot \mathbf{x}$         ▷ Update the weight vector  $\beta$ 
11:            error  $\leftarrow \text{error} + 1$         ▷ Increment the error count
12:        end if
13:    end for
14:    if error  $\leq \epsilon$  or  $i \geq \text{maxiter}$  then    ▷ Stopping criterion: tolerance or max iterations?
15:        break                                ▷ Exit the training loop
16:    end if
17:     $i \leftarrow i + 1$                             ▷ Increment the loop counter and repeat
18: end while

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