Homework Assignment N°2

BML36
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Contents

1 Exercise 2: Logistic classification & discrimination

1.1 Part a

Initialize w_0 ?

1. Some fixed w_0 like $\begin{bmatrix}0 & 0 & \cdots & 1\end{bmatrix}$
2. Some computation around the dataset like the mean: $w_0 = \frac{1}{N}\sum_{i=1}^{N} x_i$
3. Some random vector

How to learn: for batch learning use this equation at each step

$$w_{n+1} = w_n - \eta \nabla E(w_n) = w_n - \eta \sum_{n=1}^{N} (y(n) - t_n)\, x_n$$

How to stop the iterative process ?

1. Stop when the norm of the difference vector is low: $\Delta_n = \frac{\|w_{n+1} - w_n\|}{\|w_n\|} < \epsilon$
2. Stop after fixed number of iteration
3. Stop when a threshold error is reached: $E(w_n) < \epsilon$
4. More complicated criterion ?

```
# Some python code
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