

12.5.2020 Doubtful logistic regression

$$C(a, y) = \begin{cases} 1 & \text{if } a \in \{+1, -1\} \text{ and } a \neq y \\ c_D & \text{if } a = 0 \\ 0 & \text{otherwise} \end{cases}$$

$$P(y = +1 | x) = p$$

$$c_+ = \mathbb{E}_y [C(a, y) | x] = 1 - p$$

$$c_- = p$$

Thus if $p < c \Rightarrow c_- < c_D$

if $p > 1 - c \Rightarrow c_+ < c_D$

otherwise if $c \leq p \leq 1 - c$, $c_D \leq \min\{c_-, c_+\}$