

We can squeeze this bound by choosing α_t on each iteration to minimize Z_t .

$$Z_t = \sum_{i=1}^m D_t(i) \exp(-\alpha_t y^i h_t(x^i))$$

$$\epsilon_t = \sum_{i=1}^m D_t(i) \delta(h_t(x^i) \neq y^i)$$

For boolean Y: differentiate, set equal to 0, there is a closed form solution! [Freund & Schapire '97]:

$$\alpha_t = \frac{1}{2} \ln \left(\frac{1 - \epsilon_t}{\epsilon_t} \right)$$