Exponential Loss as Entropy Optimization

• all vectors \mathbf{d}_t created by AdaBoost have form:

$$d(i) = \exp\left(-y_i \sum_j \lambda_j g_j(x_i)\right)$$

- let $Q = \{$ all vectors **d** of this form $\}$
- can rewrite exponential loss:

$$\inf_{\lambda} \sum_{i} \exp\left(-y_{i} \sum_{j} \lambda_{j} g_{j}(x_{i})\right) = \inf_{\mathbf{d} \in \mathcal{Q}} \sum_{i} d(i)$$

$$= \min_{\mathbf{d} \in \overline{\mathcal{Q}}} \sum_{i} d(i)$$

$$= \min_{\mathbf{d} \in \overline{\mathcal{Q}}} \operatorname{RE}\left(\mathbf{0} \parallel \mathbf{d}\right)$$

• $\overline{\mathcal{Q}} = \text{closure of } \mathcal{Q}$