Boosting and the Minmax Theorem

- γ-weak learning assumption:
  - for every distribution on examples
  - can find weak classifier with weighted error $\leq \frac{1}{2} - \gamma$
- equivalent to:

$$(\text{value of game } \mathbf{M}) \geq \frac{1}{2} + \gamma$$

- by minmax theorem, implies that:
  - $\exists$ some weighted majority classifier that correctly classifies all training examples with margin $\geq 2\gamma$
  - further, weights are given by maxmin strategy of game $\mathbf{M}$