Algorithm 1 AdaBoost algorithm.

Input:
  $\mathcal{D} = \{(\mathbf{x}_i, y_i)\}_{i=1}^n$
  Weak learning model
  Positive integer T

Initialization:
  Initialize sampling distribution $p^{(1)}(i) = \frac{1}{n}$ for $\forall i \in \{1, 2, \ldots, n\}$

Loop:
  for $t = 1$ to T
      Sample data set $\mathcal{D}^{(t)}$ from $\mathcal{D}$ according to $p^{(t)}(i)$
      Learn model $f_t(\mathbf{x})$ from $\mathcal{D}^{(t)}$
      Calculate error ϵ_t on training data $\mathcal{D}$ as $\epsilon_t = \sum_{i:f_t(\mathbf{x}_i) \neq y_i} p^{(t)}(i)$
      Set $\beta_t = \frac{\epsilon_t}{1-\epsilon_t}$
      Set $w_t = \ln \frac{1}{\beta_t}$
      Set $p^{(t+1)}(i) = \frac{p^{(t)}(i)}{Z} \cdot \begin{cases} \beta_t & \text{if } f_t(\mathbf{x}_i) = y_i \\ 1 & \text{otherwise} \end{cases}$, where Z is a normalizer
  end

Output:
  $f(\mathbf{x}) = \text{sign}\left(\sum_{t=1}^T w_t f_t(\mathbf{x})\right)$