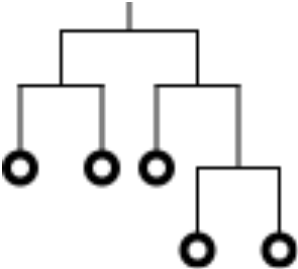
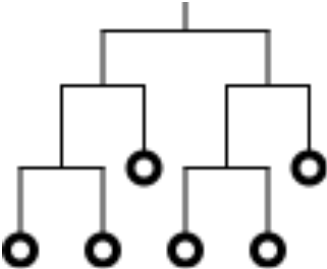
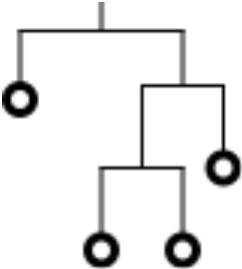




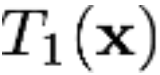
Gradient Boosting Machine (GBM)











I 2



13





T

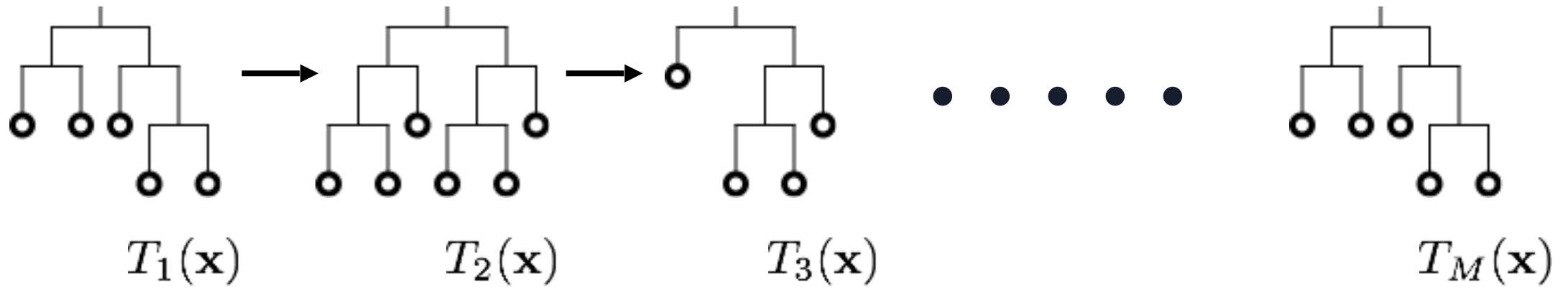
nn

(X)



$$f_i(x) = f_{i-1}(x) + T_i(x; \Theta_i)$$

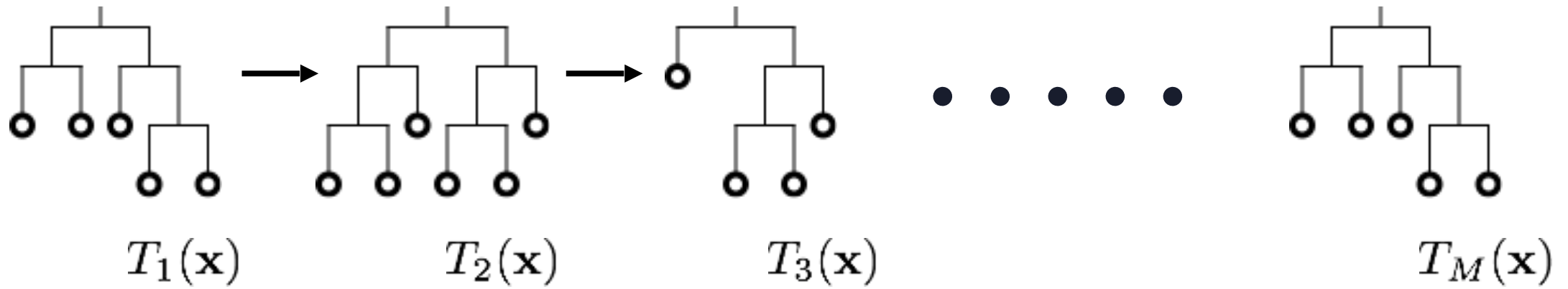
Gradient Boosting Machine (GBM)



Algorithm 1 Forward Stagewise Additive Training

- 1: Initialize $f_0(\mathbf{x}) = 0$.
 - 2: **for** $i = 1$ to M **do**
 - 3: $\hat{\Theta}_i = \arg \min_{\Theta_i} \sum_{i=1}^n L(y_i, f_{i-1}(x_i) + T(x_i; \Theta_i))$
 - 4: $f_i(\mathbf{x}) = f_{i-1} + T(\mathbf{x}; \hat{\Theta}_i)$
 - 5: **end for**
 - 6: $f(\mathbf{x}) = f_M(\mathbf{x})$
-

Gradient Boosting Machine (GBM)



$$f_i(\mathbf{x}) = f_{i-1}(\mathbf{x}) + T_i(\mathbf{x}; \hat{\Theta}_i)$$