



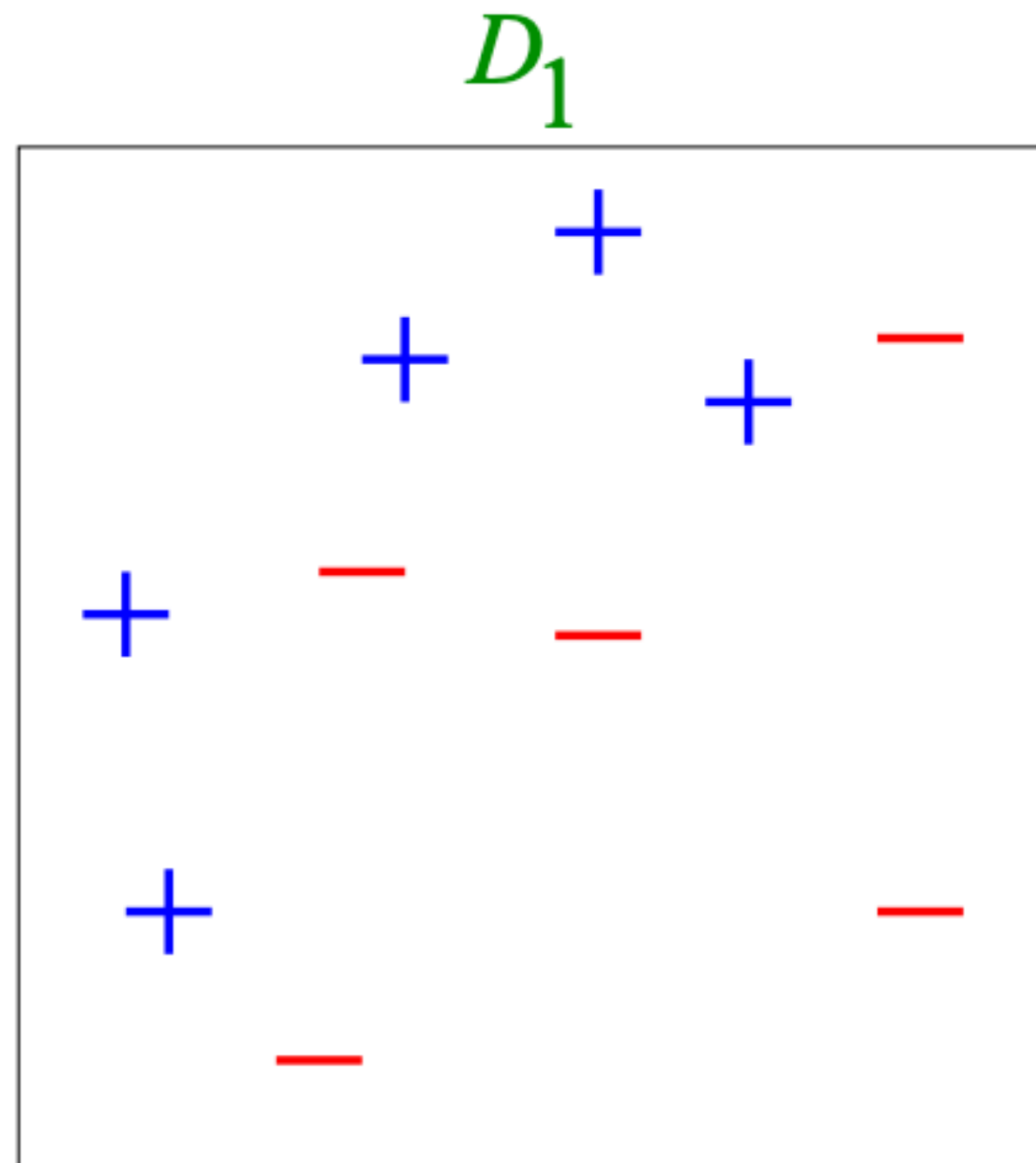
# Foundations of Machine Learning (CS 725)

## FALL 2024

Lecture 23:  
- Boosting

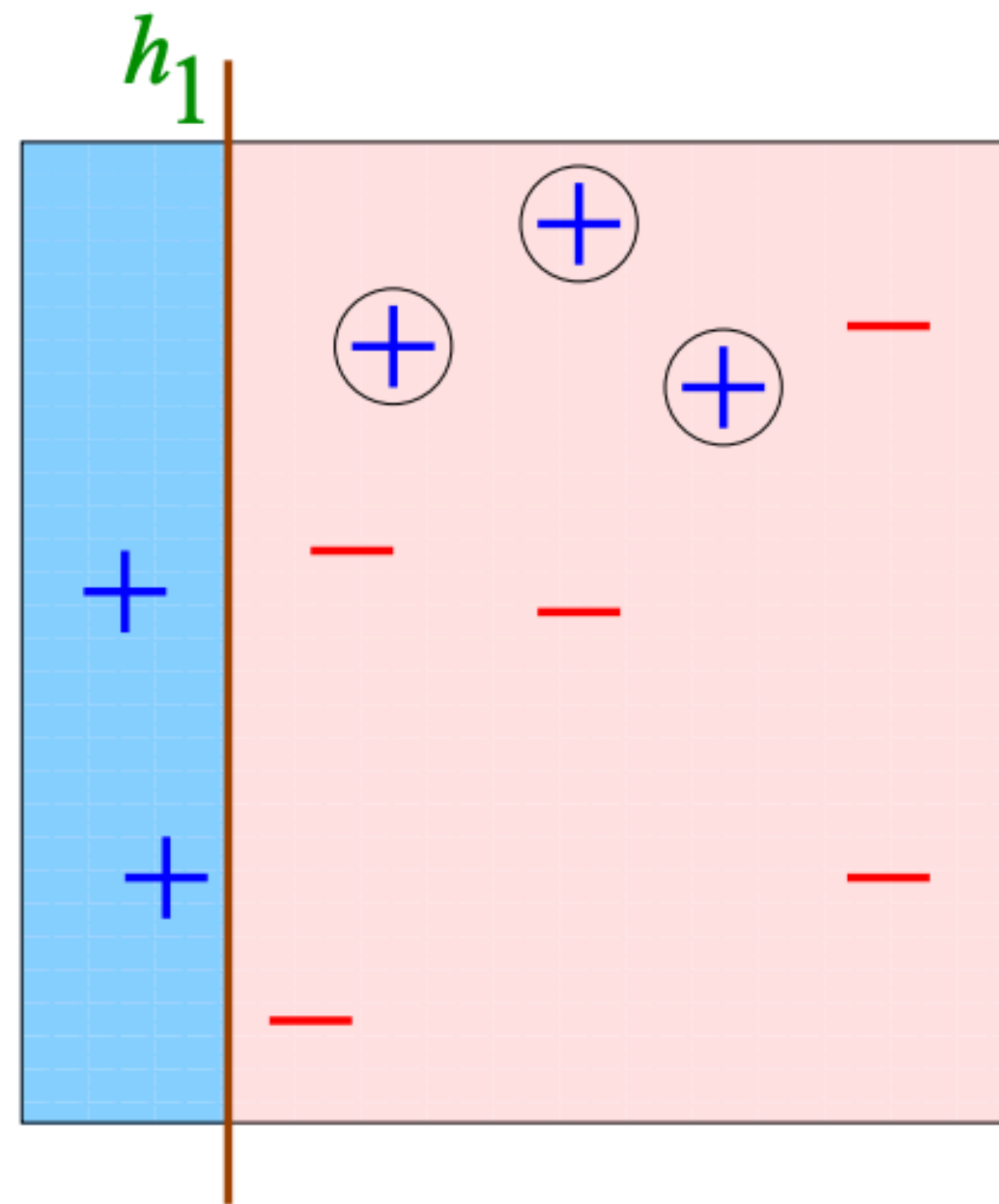
Instructor: Preethi Jyothi

# Toy Example



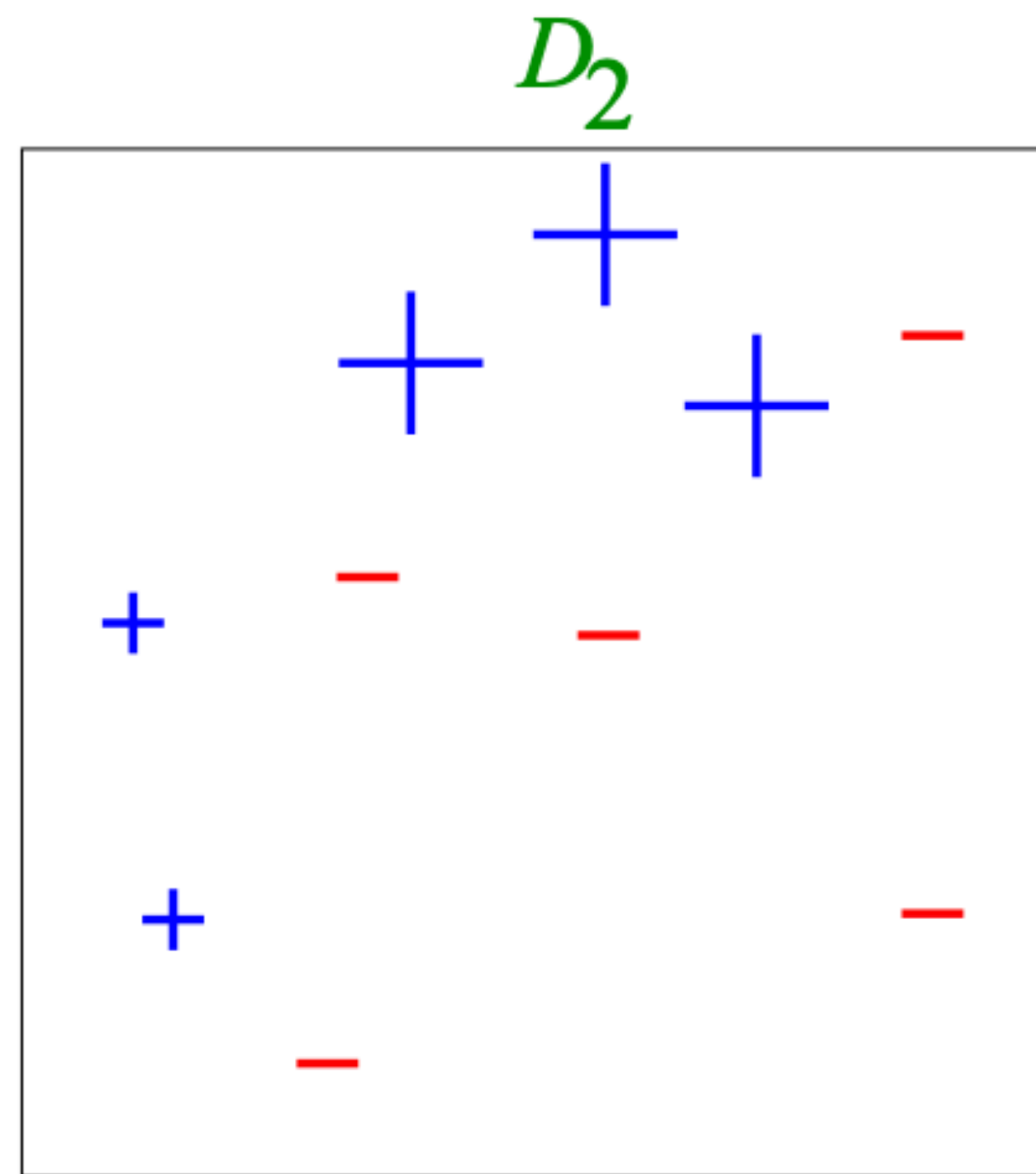
Weak classifiers derived from the hypothesis class of axis-parallel lines i.e., vertical or horizontal lines

# Adaboost: Round 1

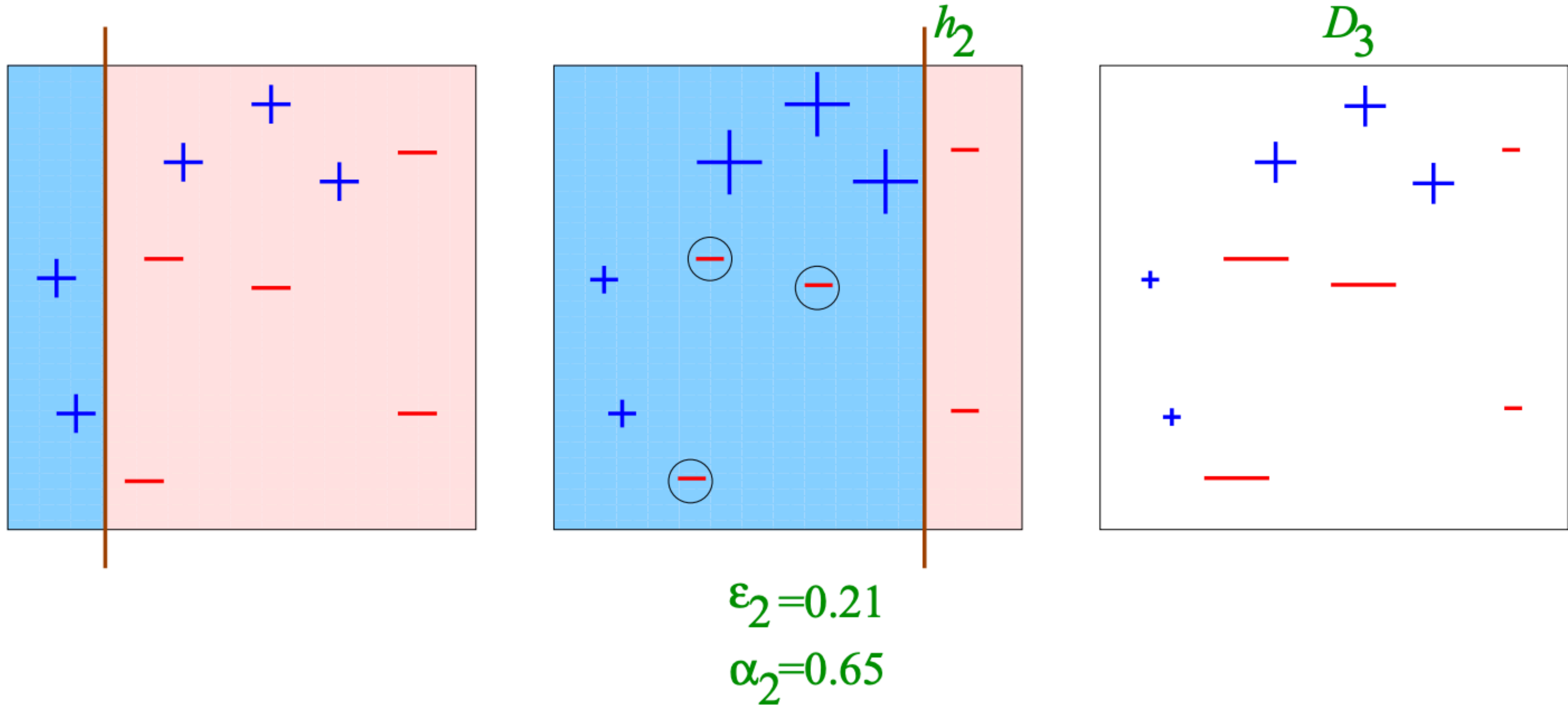


$$\epsilon_1 = 0.30$$

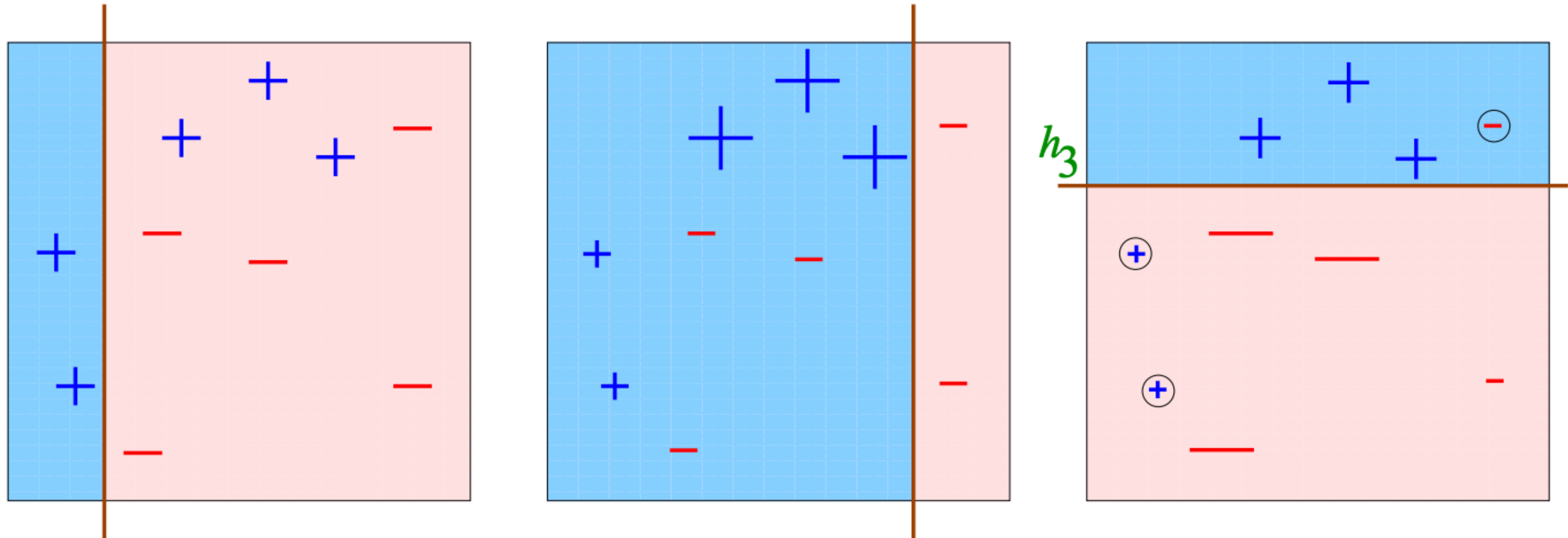
$$\alpha_1 = 0.42$$



# Adaboost: Round 2



# Adaboost: Round 3



$$\epsilon_3 = 0.14$$

$$\alpha_3 = 0.92$$

# Final Classifier

$$H_{\text{final}} = \text{sign} \left( 0.42 \begin{array}{|c|} \hline \text{blue} \\ \hline \end{array} + 0.65 \begin{array}{|c|} \hline \text{blue} \\ \hline \end{array} + 0.92 \begin{array}{|c|} \hline \text{blue} \\ \hline \end{array} \right)$$

