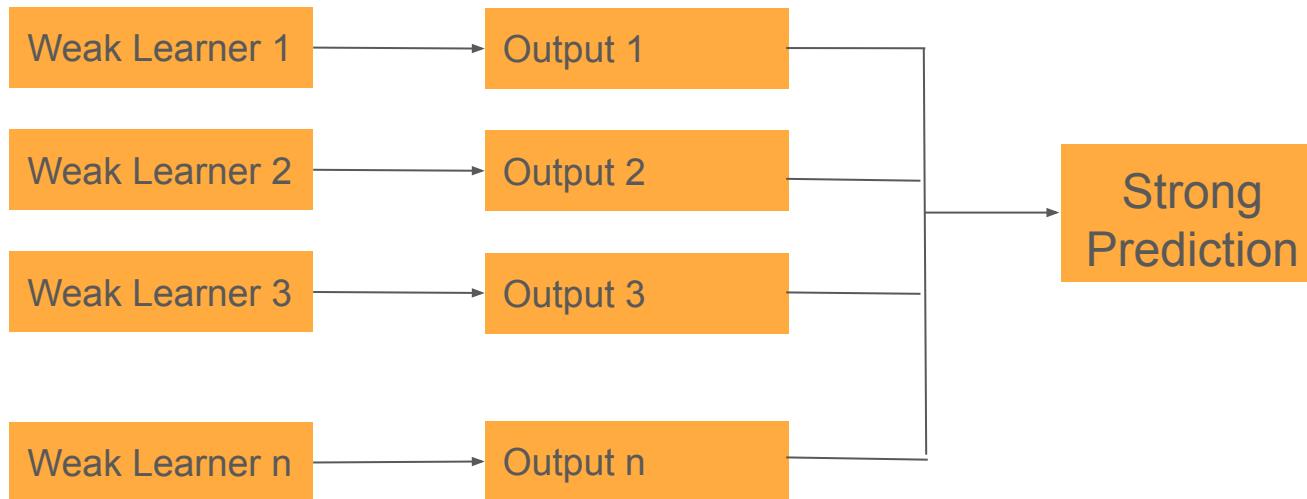


# AdaBoost (Adaptive Boosting)

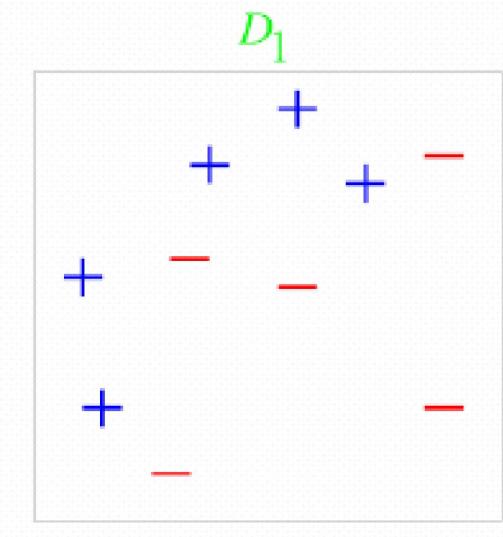
- Ensemble technique which combines many weak models into one strong model that performs better.



# AdaBoost

- Iteratively trains multiple weak learners
- Adjusts weights of misclassified samples
- Each learner focuses on previous errors
- Combines weak learners for strong prediction

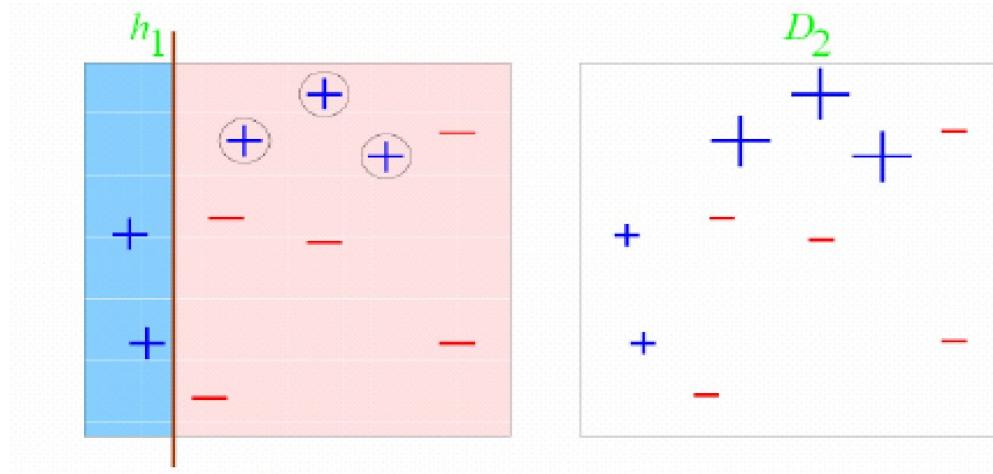
# AdaBoost



Training set: 10 points (represented by plus or minus)

Original Status: Equal Weights for all training samples

# AdaBoost



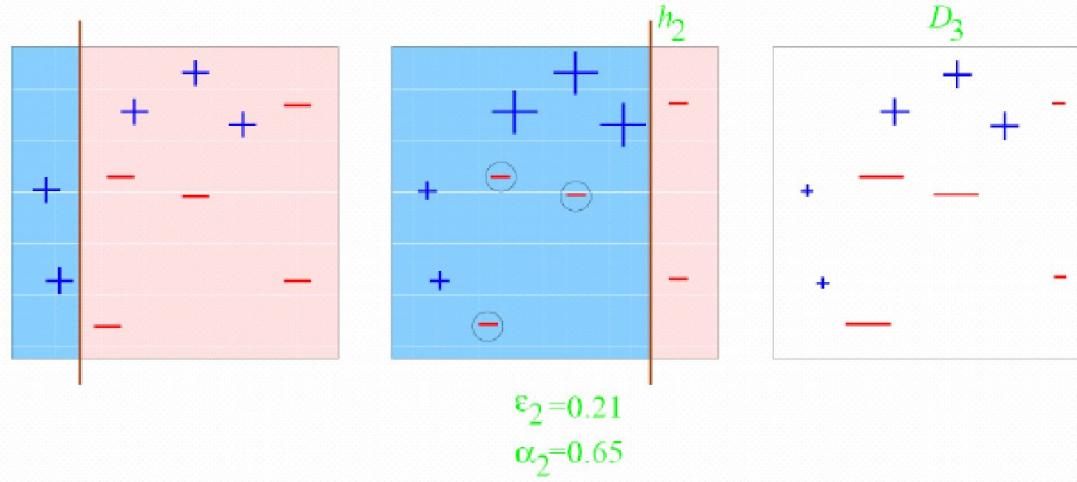
$$\varepsilon_1 = 0.30$$

$$\alpha_1 = 0.42$$

4

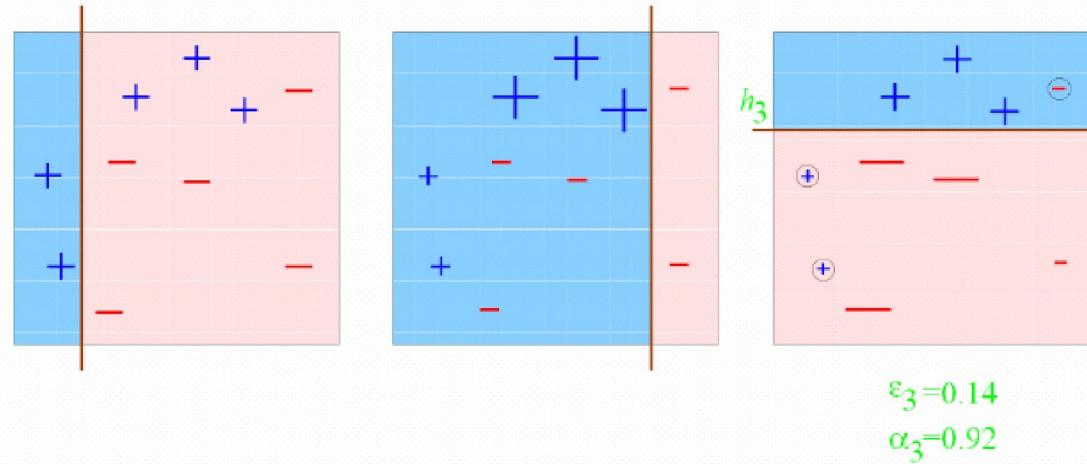
Round 1: Three “plus” points are not correctly classified;  
They are given higher weights.

# AdaBoost



Round 2: Three “minus” points are not correctly classified;  
They are given higher weights.

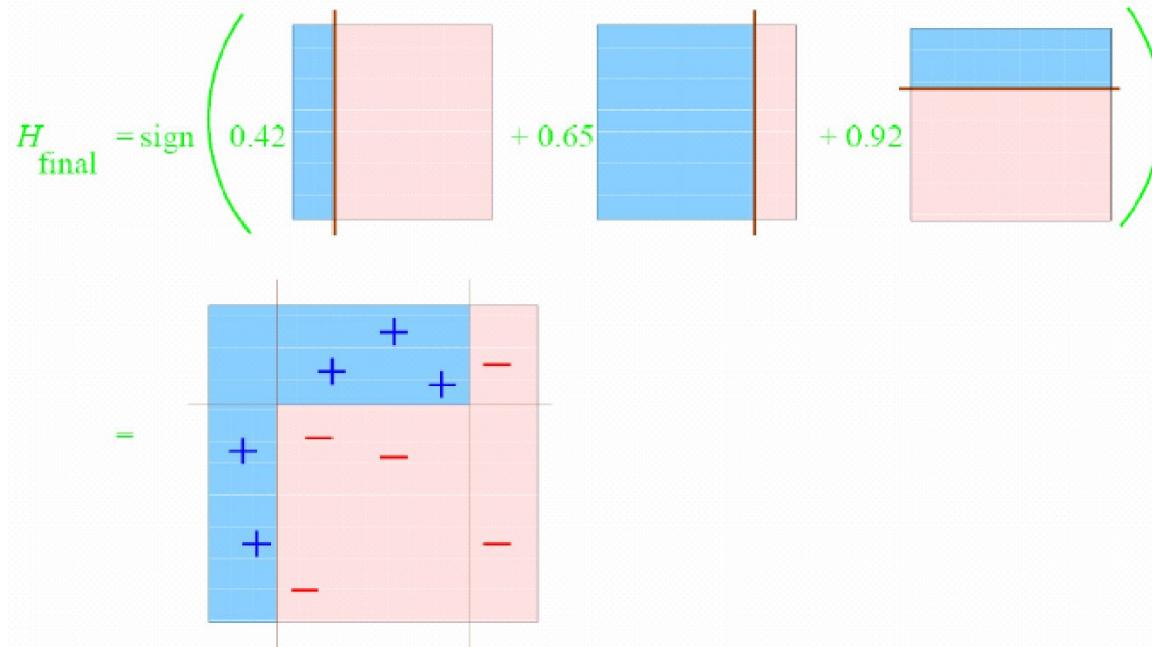
# AdaBoost



6

Round 3: One “minus” and two “plus” points are not correctly classified;  
They are given higher weights.

# AdaBoost



Integrate the three “weak” classifiers and obtain a final strong classifier.