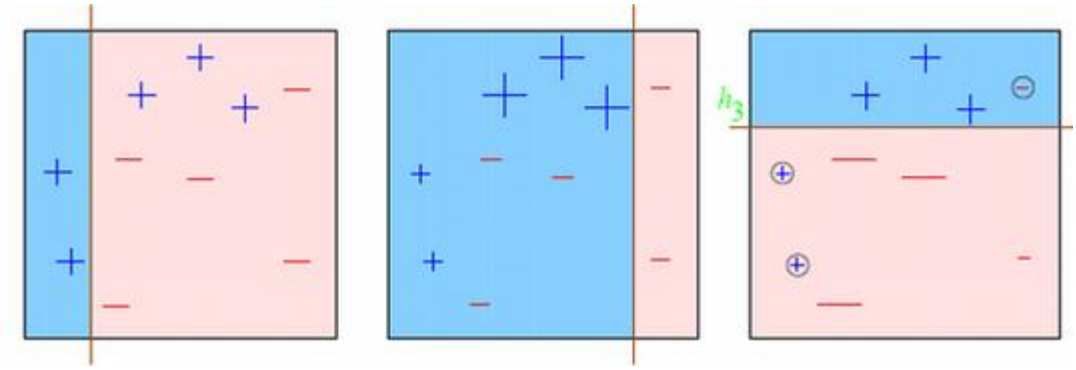
1. How Boosting Works ?

Boosting is a sequential technique which works on the principle of **ensemble**. It combines a set of **weak learners** and delivers improved prediction accuracy. At any instant t, the model outcomes are weighed based on the outcomes of previous instant t-1. The outcomes predicted correctly are given a lower weight and the ones miss-classified are weighted higher. This technique is followed for a classification problem while a similar technique is used for regression.

Let's understand it visually:



Observations:

1. **Box 1: Output of First Weak Learner (From the left)**
    - Initially all points have same weight (denoted by their size).
    - The decision boundary predicts 2 +ve and 5 -ve points correctly.
2. **Box 2: Output of Second Weak Learner**
    - The points classified correctly in box 1 are given a lower weight and vice versa.
    - The model focuses on high weight points now and classifies them correctly. But, others are misclassified now.

Similar trend can be seen in box 3 as well. This continues for many iterations. In the end, all models are given a weight depending on their accuracy and a consolidated result is generated.