

In Perceptron Algorithm, Why use $y - \hat{y}$ Instead of $\hat{y} - y$?

In perceptron algorithm, $\text{error} = y - \hat{y}$. So if \hat{y} is bigger than y , error must be negative value, and weight value will be decreasing.

The opposite case, in same logic, the weight value will be increasing.

but if we denote $\text{error} = \hat{y} - y$, the weight value will be adjusted in the wrong direction.

In this algorithm, if $\hat{y} > y$, \hat{y} must be decreased.

else if $\hat{y} < y$, \hat{y} must be increased. So we use $\text{error} = y - \hat{y}$.