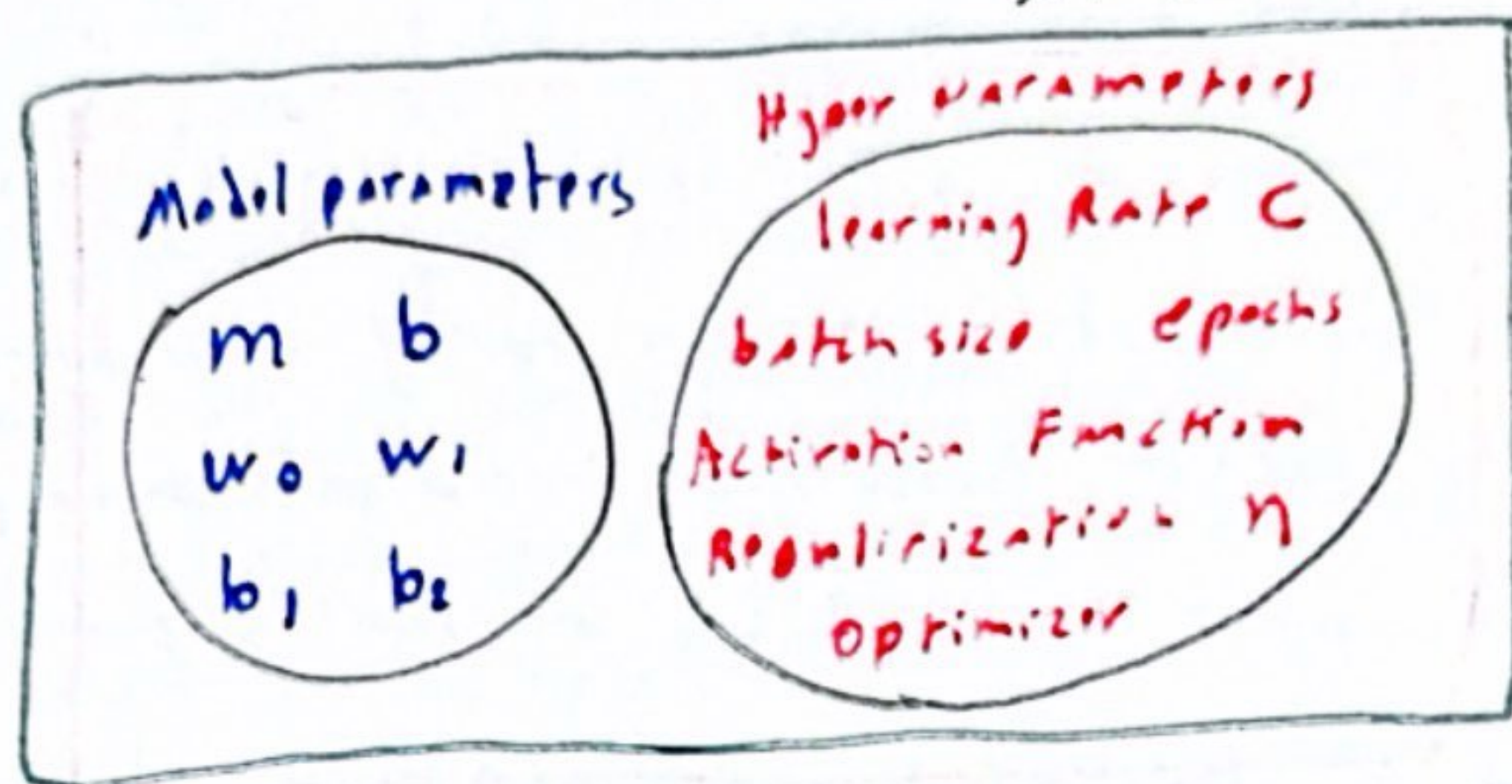


Hyper parameter

- is a configuration setting used to control the learning process, set Before training Begins, not like model parameters which are learned in training. Like knobs + dials for model

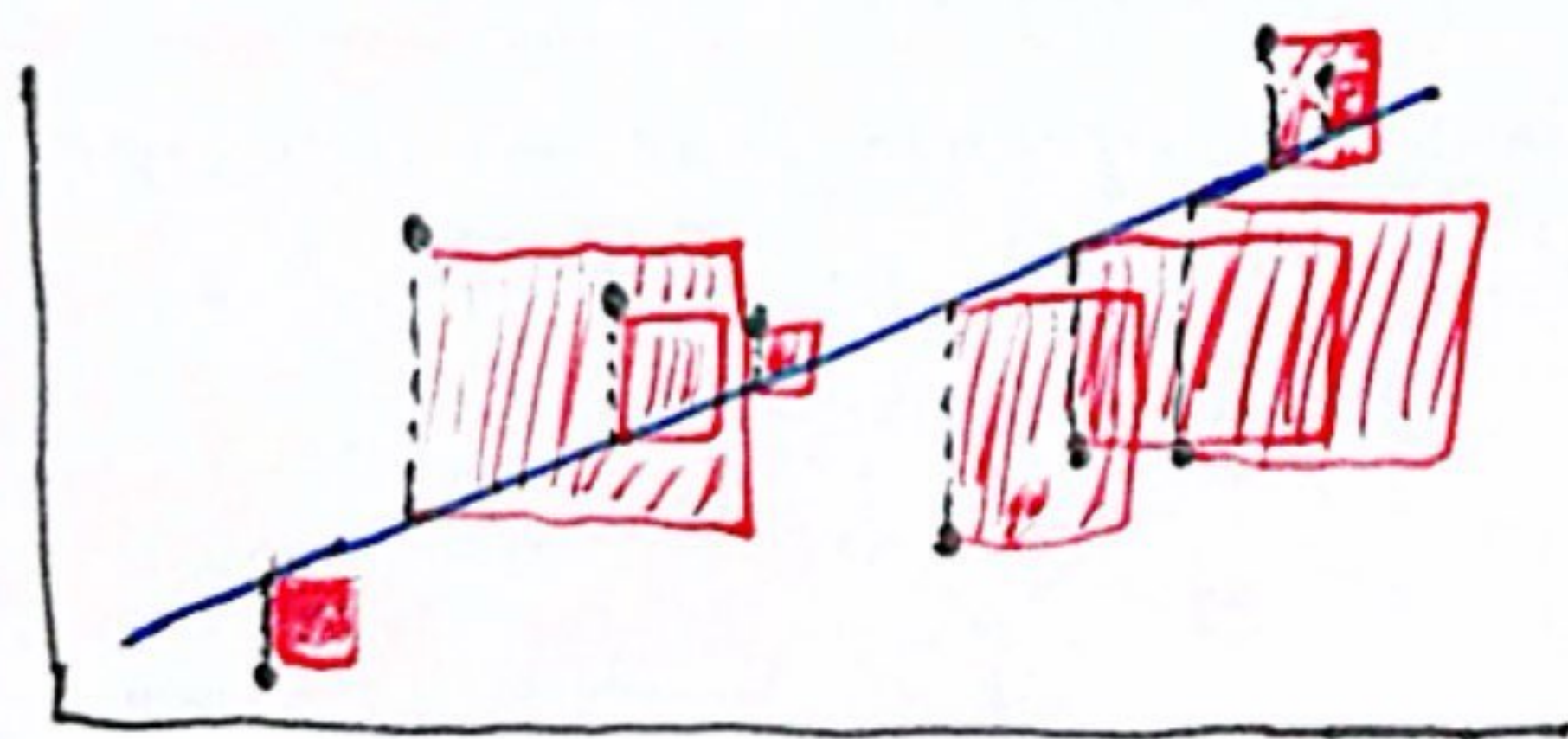
✱ finding the right hyper parameters requires experimenting as optimal setting vary from problems and datasets



Cost function (loss function)

- is a measure of how wrong a model's predictions are compared to true values, it quantifies the cost or penalty of a incorrect prediction,

Ex: in a house price model (linear) the cost might be the avg distance between predicted and actual prices so in the Ex below we use Mean squared error MSE function it is the squared vertical distances from the regression line to data points where line is prediction and data point is true value. here that is the sum of all red square areas the further the distance & larger the error. The goal of training is to minimize this cost function (loss or error)



$$MSE = \frac{1}{N} \sum_{i=1}^N (y_i - \hat{y}_i)^2$$

$\frac{1}{N}$ → avg over results
 y_i → true y
 \hat{y}_i → prediction of y
 → loss function for linear Regression

- ✱ the choice of loss function significantly influences how the model learns and what kind of errors it prioritizes avoiding and is another hyperparameter