**GRID SEARCH**

A model hyper parameter is a characteristic of a model that is external to the model and whose value cannot be estimated from data. The value of the hyper parameter has to be set before the learning process begins. Hyper parameters are not the model parameters and it is not possible to find the best set from the training data. Model parameters are learned during training when we optimize a loss function using something like a gradient descent. For example, c in Support Vector Machines, k in k-Nearest Neighbors, the number of hidden layers in Neural Networks. In contrast, a parameter is an internal characteristic of the model and its value can be estimated from data. Example, beta coefficients of linear/logistic regression or support vectors in Support Vector Machines.

Hyper parameter tuning refers to searching for the right hyper parameter to find the high precision and accuracy. In this tuning technique, we simply build a model for every combination of various hyper parameters and evaluate each model. The model which gives the highest accuracy wins. The pattern followed here is similar to the grid, where all the values are placed in the form of a matrix. Each set of parameters is taken into consideration and the accuracy is noted. Once all the combinations are evaluated, the model with the set of parameters which give the top accuracy is considered to be the best.

Grid Search is a method of hyper parameter tuning. Grid-search is used to find the optimal hyper parameters of a model which results in the most accurate predictions. Grid search is an approach to parameter tuning that will methodically build and evaluate a model for each combination of algorithm parameters specified in a grid. It is important to note that Grid-search can be extremely computationally expensive and may take your machine quite a long time to run. It iterates through every parameter combination and stores a model for each combination and return the best model parameters. The first step you need to perform is to create a dictionary of all the parameters and their corresponding set of values that you want to test for best performance. The name of the dictionary items corresponds to the parameter name and the value corresponds to the list of values for the parameter