Evaluate a Machine Learning Model

When our model makes prediction, the next step is often to measure the performance of our model. Data Scientists and other Machine Learning Experts spend a larger part to evaluate a Machine Learning (ML) model because they want to make sure that the model performs best in every sense before they use it practically.

There are lot of ways to evaluate a ML model, but I will take you through the 4 best ways to evaluate the performance of ML model.

Confusion Matrix

One of the best ways to evaluate the performance of a classification model is to look at the confusion matrix algorithm. The idea behind a Confusion Matrix is to count the number of times instances of class X are classified as class Y. To calculate the confusion matrix, we first need to have a set of predictions so that they can be compared with the actual targets.

Precision and Recall

In ML, Precision and Recall are the two most important metrics for Model Evaluation. **Precision** represents the percentage of the results of our model, which are relevant to our model. The **Recall** represents the percentage of total pertinent results classified correctly by our model.

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Cross-Validation

Validation Set is used to evaluate the model's hyperparameters. Our ML model will go through this data, but it will never learn anything from the validation set. A Data Scientist uses the results of a Validation set to update higher level hyperparameters. We can use a validation set with the help of the cross-validation method in ML.

The Roc Curve

The Receiver Operating Characteristic (ROC) curve is a popular tool used with binary classifiers. It is very similar to the precision/recall curve. Still, instead of plotting precision versus recall, the ROC curve plots the true positive rate (another name for recall) against the false positive rate (FPR). The FPR is the ratio of negative instances that are incorrectly classified as positive. It is equal to 1. The true negative rate (TNR), which is the ratio of negative cases that are correctly classified as negative. The **TNR** is also called **specificity.**

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