Time Series Cross Validation

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Quiz

- How to do cross validation for time series model?

Topics

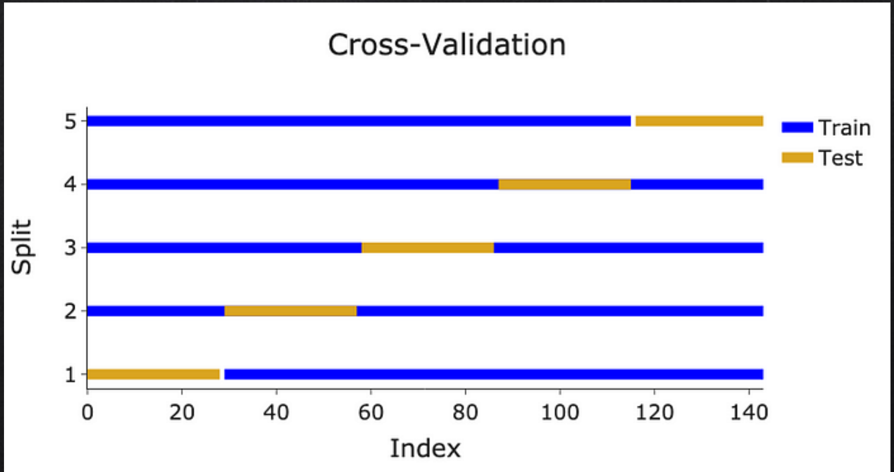
- Cross Validation

1.

Cross Validation

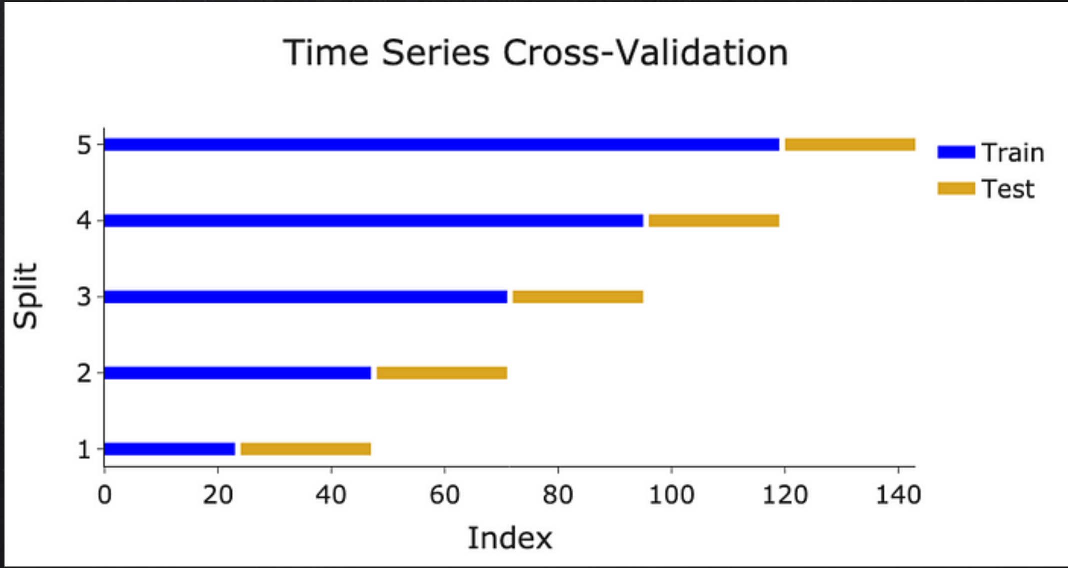
Challenge for time series cross validation

We cannot choose random samples and assign them to either the test set or the train set because it makes no sense to use the values from the future to forecast values in the past. In simple word we want to avoid future-looking when we train our model. There is a temporal dependency between observations, and we must preserve that relation during testing.



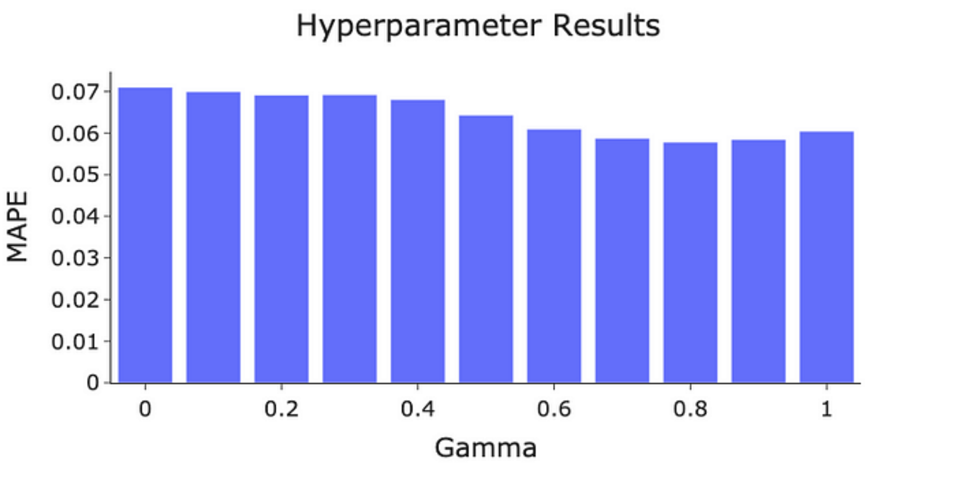
Challenge for time series cross validation

The method that can be used for cross-validating the time-series model is cross-validation on a rolling basis. Start with a small subset of data for training purpose, forecast for the later data points and then checking the accuracy for the forecasted data points. The same forecasted data points are then included as part of the next training dataset and subsequent data points are forecasted.



Hyperparameter Tuning

1. Define the hyperparameters to fine turn. For example, the Gamma of Exponential Smoothing. p, d, q of ARIMA.
2. Conduct grid search or random search to loop each hyperparameter combination and record the cross validation results.
3. Return the hyperparameters and have the lowest error in cross validation.



Recommended Readings

https://medium.com/@soumyachess1496/cross-validation-in-time-series-566ae4981ce4

https://towardsdatascience.com/how-to-correctly-perform-cross-validation-for-time-series-b083b869e42c

https://medium.com/@mertsukrupehlivan/mastering-time-series-forecasting-a-guide-to-hyperparameter-tuning-for-sarimax-models-b4a84062cba3

https://machinelearningmastery.com/how-to-grid-search-deep-learning-models-for-time-series-forecasting/

https://blog.gopenai.com/how-to-perform-grid-search-hyperparameter-tuning-for-lstm-9bed04932d95