**Algorithm 2: The k-nTS+ Swapping Method**

**Require [Initialization]:**

: the matrix of original time series.

: the baseline privacy methods.

: set of functions for calculating time series features.

: the desired forecasting model.

: the number of nearest neighbor time series to consider for RReliefF.

the number of recursive feature elimination iterations

: recursive feature elimination prediction error threshold

: the number of nearest neighbor time series to consider for swapping.

*Step 1: Create Baseline Protected Datasets*

Use baseline privacy methods to create protected data sets through time

*Step 2: Generate Baseline Forecasts*

Generate forecasts using for times through for the original and baseline protected data sets

*Step 3: Measure Forecast Accuracy*

Compute the forecast error at the series level for the original and protected data sets

*Step 4: Compute and Select Time Series Features*

1. Compute time series features using for the original and protected data sets through time
2. Use RReliefF (Robnik-Sikonja & Kononenko, 2003) with nearest-neighbor parameter to weight the ability of features to discriminate between series with different forecast accuracies
3. Drop features with RReliefF weights
4. **for**  **do** [*use RFE to select most important features*]
   1. Train a random forest to predict forecast accuracy using the features from RReliefF
   2. Drop the least important feature
   3. Repeat (a.) and (b.) until one feature remains

**end for**

1. Rank the RReliefF features from least to most important using the average order of elimination across the iterations of RFE
2. Obtain selected feature functions which are the minimum features required by the random forest model to attain prediction accuracy within % of the random forest model with the best predictive accuracy

*Step 5: Create Protected Data Set using k-nTS+ Swapping*

Use input *k* and feature functions selected in *Step 4* to perform swapping through time *T* using **Algorithm 1: The k-nTS Swapping Method.**

**Output:** k-nTS+ protected time series data set