

Method Description

General Information

Type of Entry (<i>Academic, Practitioner, Researcher, Student</i>)	Academic
First Name	Somnath
Last Name	Mukhopadhyay
Country	USA
Type of Affiliation (<i>University, Company-Organization, Individual</i>)	University
Affiliation	The University of Texas at El Paso

Team Members (*if applicable*):

1 st Member	
First Name	Somnath
Last Name	Mukhopadhyay
Country	
Affiliation	
2 nd Member	
First Name	
Last Name	
Country	
Affiliation	

Information about the method utilized

Name of Method	Neural Networks (NN)
Type of Method (<i>Statistical, Machine Learning, Combination, Other</i>)	MLP trained
Short Description (up to 200 words)	The goal of the method is to find one NN method across all 100000 time series

Extended Description:

Apart from the textual description, please consider including an informative flowchart to help researchers better understand the exact steps followed for generating the forecasts. Please also try to clarify any assumptions made, the initialization and parameterization process used, etc., to facilitate reproducibility and replicability.

The goal here is to use a simple implementable machine learning method and compare its performance with other sophisticated statistical methods. Knowing that a certain sophisticated method is not as accurate as a much simpler one is upsetting from a scientific point of view as the former requires a great deal of academic expertise and ample computer time to be applied (Spyros Makridakis¹, Evangelos Spiliotis^{2*}, Vassilios

Assimakopoulos2PLOS ONE | <https://doi.org/10.1371/journal.pone.0194889> March 27, 2018). With that in mind my team has created one simple MLP-trained method for all 100,000 time-series.

- First select the topology of NN for all time-series based on performance of 100 randomly drawn time-series. Here the network chosen is MLP trained network single hidden layer with 6 hidden units and 1 output unit. The input layer has an additional bias unit along with the time period (t).
- If the forecast is jumpy (more than 1.5 in absolute term from the previous time-series forecast) then the hidden units are dropped for those forecasts.
- If the forecasts are still jumpy, they are replaced with naïve forecasts.