Model Card for Electricity Time Series Dataset

MODEL DETAILS

OVERVIEW

This is a Long Short-Term Memory Neural Network that forecasts the time series of 120 hours of the electricity usage of 370 clients with 10 sub-sequences each using as input the last 720 data points of each client.

VERSION

name: LSTM-final-20220430
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OWNERS

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REFERENCES

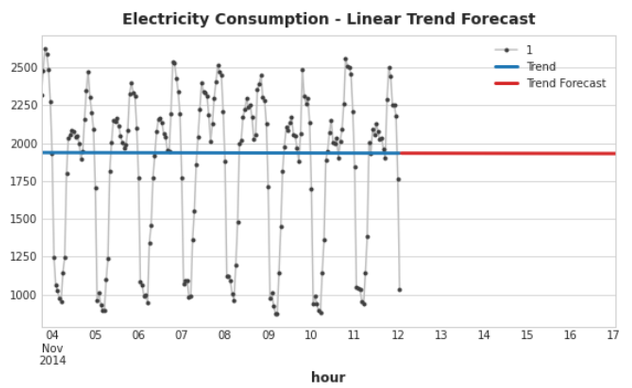
- arXiv:1703.07015
- Github: electricity_load_diagrams

DATASETS

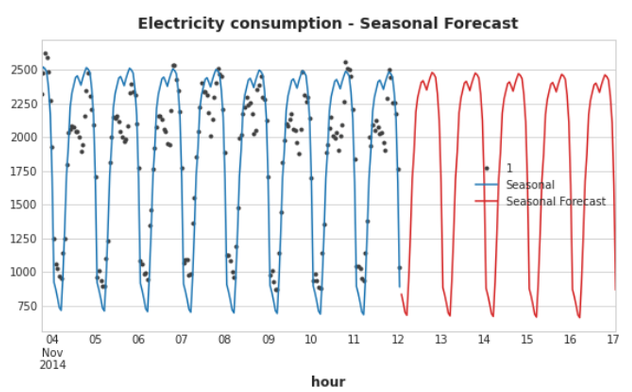
There are 4 main elements that constitute a Time Series:

Trend+Seasonality+Cycles+Noise.

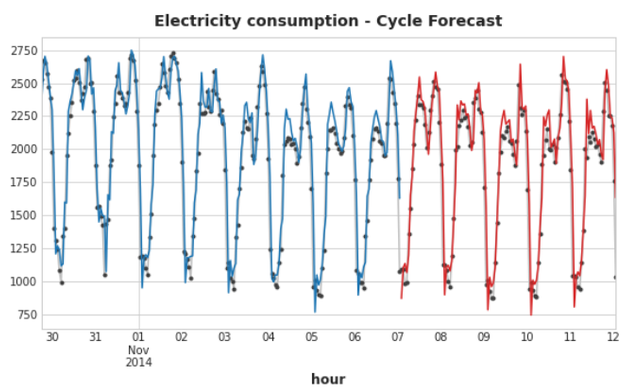
TREND



SEASONALITY



CYCLES



CONSIDERATIONS

INTENDED USERS

- Electricity company
- ML researchers

USE CASES

- Electricity usage
- This problem can be generalized to any type of problem where there is continuous prior information and the aim is to predict future behavior as output. As an example: Stock prices, daily temperatures, total daily sales, etc.

LIMITATIONS

Prediction of a set horizon of 120 units, given any sequence length with an input of 720 data points

ETHICAL CONSIDERATIONS

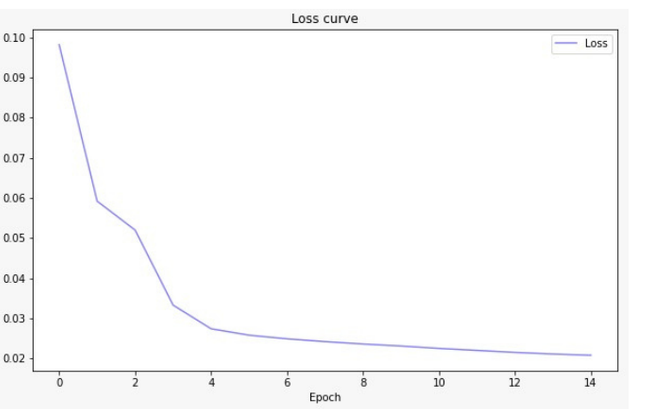
Risk: The lack of knowledge of customers future behavior puts the company at a disadvantage because it cannot foresee an approximate total consumption and thus prepare for cyclical and temporary patterns in customers consumption. Mitigation Strategy: Forecast a set horizon of 120 hours for any sub-sequence of all the clients.

QUANTITAIVE ANYLISIS

Inputs: Time Series of at least 720 observations.
Outputs: The model can forecast the next 120 observations. The model predicts 120 steps at once per client, using its last 720 observation.

LOSS

Use of mean squared error



EXAMPLE

Forecast for client number 3.