Multilayer Perceptron (MLP) para previsão de séries temporais

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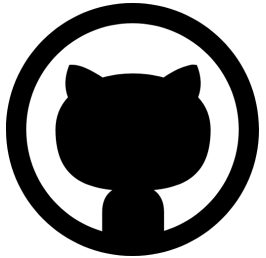
Centro de Informática - UFPE

22/08/2017

Projeto Github

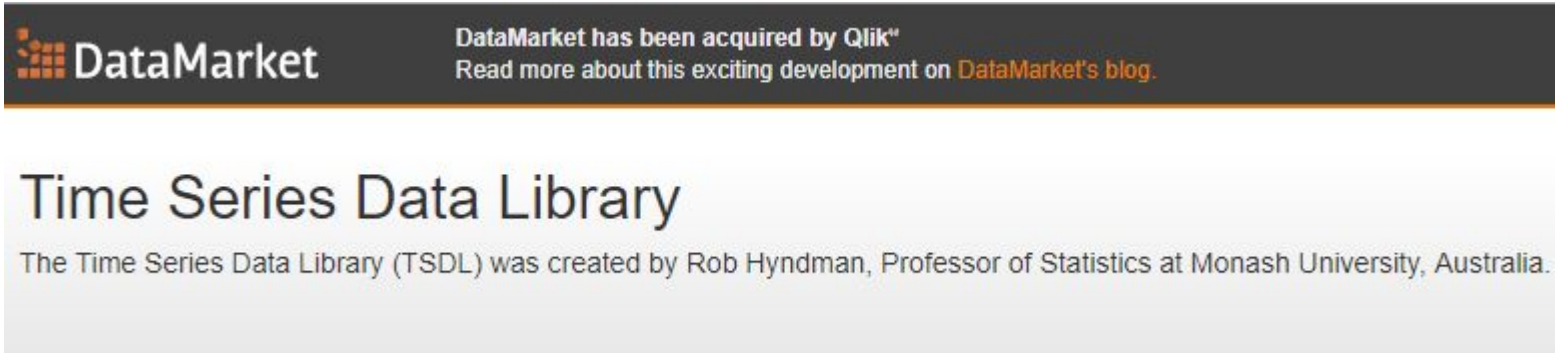
MLP_forecasting

Link: https://github.com/GustavoHFMO/MLP_forecasting



Times Series Data Library

Link: https://datamarket.com/data/list/?q=provider:tsdl



Pandas

Link: http://pandas.pydata.org/pandas-docs/stable/

- read_excel()
- read_csv()

pandas: powerful Python data analysis toolkit

PDF Version

Zipped HTML

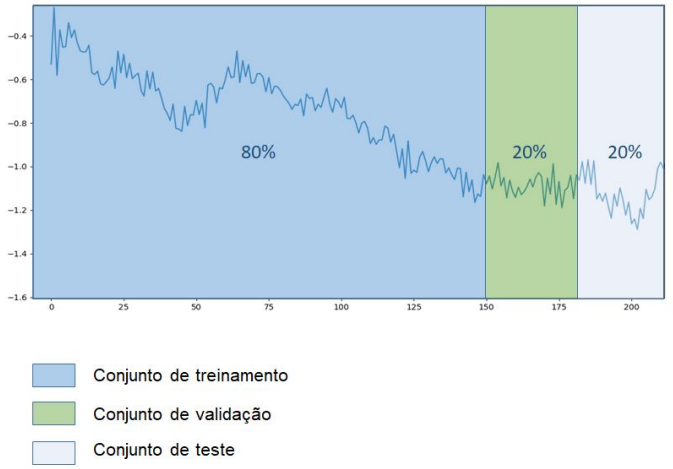
Classe Particionar_series.py

- Normalizar()
- Desnormalizar()

$$[0,1] \rightarrow f(x) = \frac{x - Min}{Max - Min}$$

Classe Particionar_series.py

- Part_train()
- Part_val()
- Part_test()



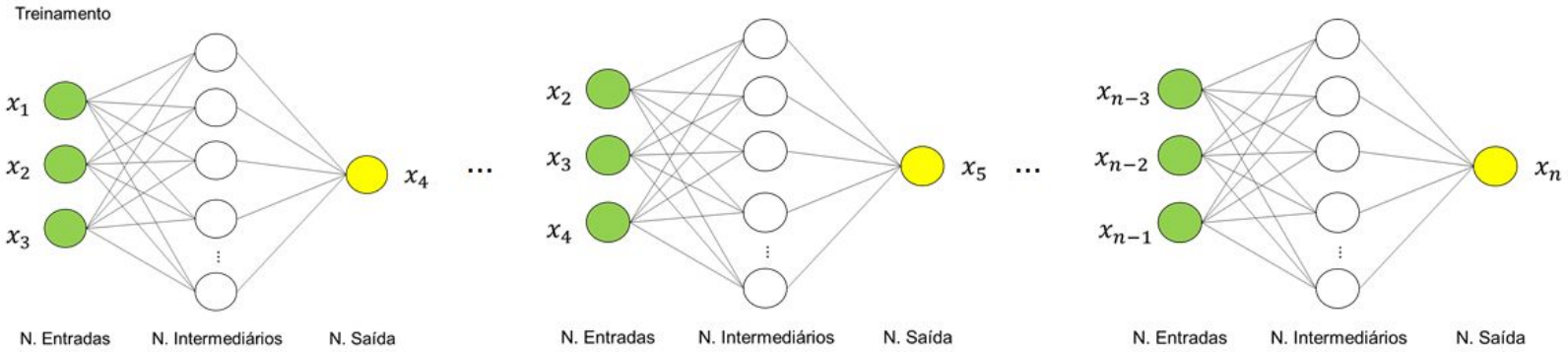
Classe Particionar_series.py

- Janela_tempo()

- $X = [x_1, x_2, x_3, x_4, x_5, x_6, \ldots, x_n]$
- p = 3
- Dados de entrada = n - p

Entradas	Saídas
x_1, x_2, x_3	x_4
x_2, x_3, x_4	x_5
x_3, x_4, x_5	x_6
...	...
$x_{n-3}, x_{n-2}, x_{n-1}$	x_n

Ajustar Neurônios de Entrada



Sklearn.neural_network

Link: http://scikit-learn.org/stable/modules/generated/sklearn.neural_network.MLPRegressor.html

- MLPRegressor()

sklearn.neural_network.MLPRegressor

class sklearn.neural_network. **MLPRegressor** (*hidden_layer_sizes=(100,), activation='relu', solver='adam', alpha=0.0001, batch_size='auto', learning_rate='constant', learning_rate_init=0.001, power_t=0.5, max_iter=200, shuffle=True, random_state=None, tol=0.0001, verbose=False, warm_start=False, momentum=0.9, nesterovs_momentum=True, early_stopping=False, validation_fraction=0.1, beta_1=0.9, beta_2=0.999, epsilon=1e-08*) [source]

sklearn.metrics.regression

Link: http://scikit-learn.org/stable/modules/model_evaluation.html#regression-metrics

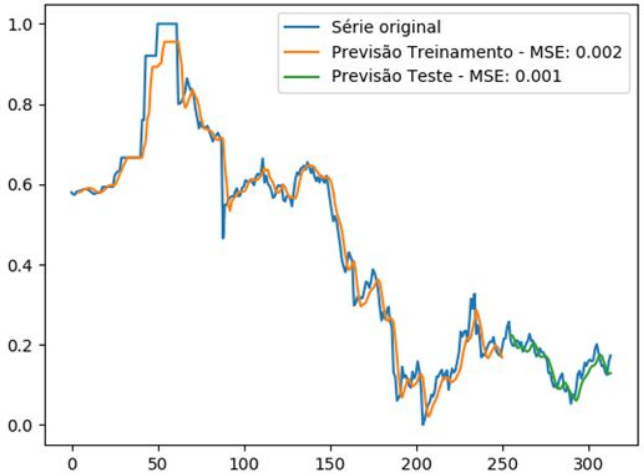
- mean_absolute_error()
- mean_squared_error()
- mean_squared_log_error()
- median_absolute_error()

$$\mathrm{MSE}(y, \hat{y}) = \frac{1}{n_{\mathrm{samples}}} \sum_{i=0}^{n_{\mathrm{samples}}-1} (y_i - \hat{y}_i)^2.$$

Plotar Previsão

Classe Main.py

- matplotlib.pyplot
- Plotar_predicoes()



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