UNIVERSITÉ
DE MONTPELLIER

Bike challange – python project

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2020/2021

Introduction

Starting from a database that contains the number of bicycles passing through rue Albert 1 ° in Montpellier from December 12, 2020 until April 1nd, 2021. We will try to predict the number of bicycle passing between 00 :01 AM and 09 :00 AM on Friday, April 2nd.

The first step is to prepare the data, for this we proceed with several elementary manipulations (check data, clean data, remove the missing and not useful data), thus transforming the date and time in a time series 'data frame' form.

The second step is to apply the ARIMA function of the "statsmodels" library, which predicts the time series over the next future days.

Prepare the data-set

In this part (line 1 to line 65 of the prediction.py code) we have carried out several transformation on the basis of give raw, by :

- Elimination of unnecessary columns, we just kept the column of the number of bikes passing on the street per day, thus eliminating missing data.

- Transformed data into time-indexed data frame (in international time form).

- Elimination of days when the time is between 09 :01 and 23 :59.

Then what the prediction would be between 00 :00 and 09 :00, It is essential to only take into consideration the times between this last period

Prediction with ARIMA

In this part (line 66 to line 122 of the prediction.py code) we have applied the function ARIMA to the deduced data, We choose to take ARIMA (1,1,2), indeed :

- An auto-regressive process AR of order 1, which makes it possible to explain its value at time t using the preceding terms.

- A moving average process MA of order 1 : which makes it possible to express its value at time t as a linear combination of random errors.

- A differentiation of order 2 : which makes it possible to remove the tendencies that they present in order to stationary them.

The final prediction result is : 138.

Link to the full project in Github :

https ://github.com/KamalAyoubi/forecasting$_m odels$

or

click here