Project Name: Forecasting Time-Series With Fbprophet

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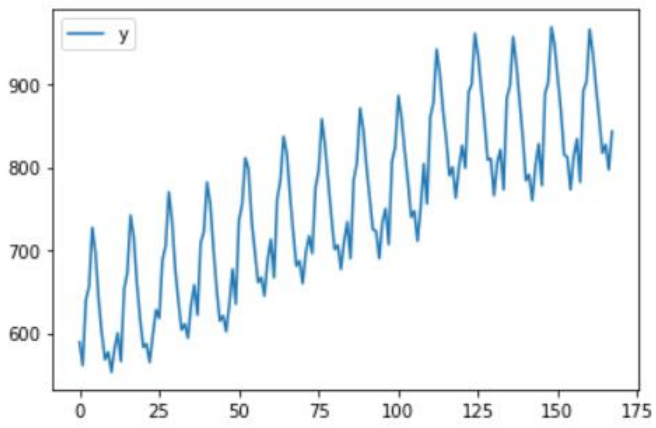
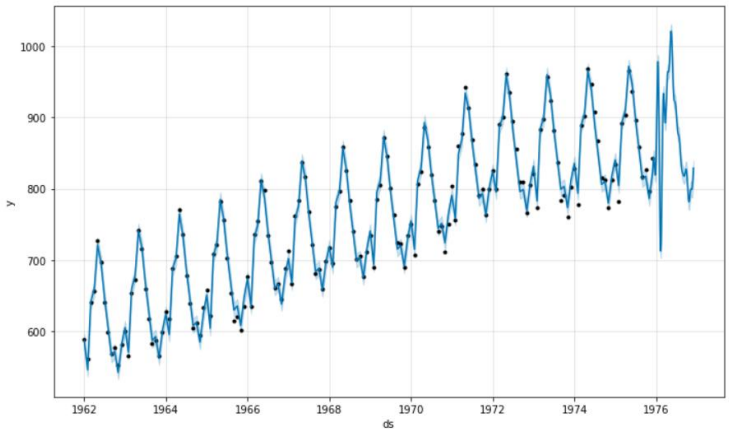
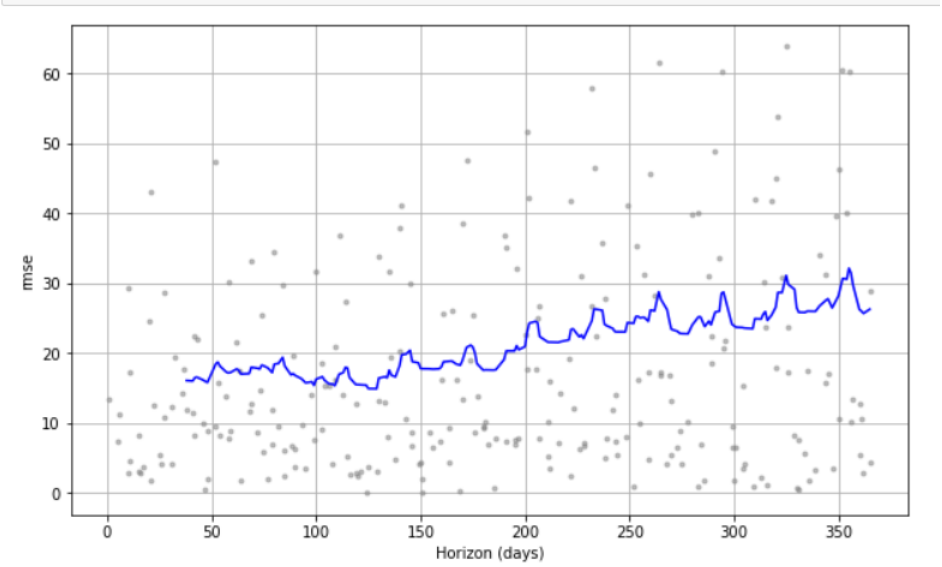
Demo







Overview

This is diving into Forecasting Time-Series Concept using fbprophet library.
This repository contains the code for Forecasting Time-Series using python's various libraries.
It used fbprophet, pandas and matplotlib libraries.
These libraries help to perform individually one particular functionality.
Pandas objects rely heavily on Numpy objects.
Matplotlib is a plotting library.
Prophet is a forecasting procedure implemented in Python. It is fast and provides completely automated forecasts that can be tuned by hand by data scientists and analysts.
The purpose of creating this repository is to gain insights into working with time series.
These python libraries raised knowledge in discovering these libraries with practical use of it.
It leads to growth in my ML repository.
These above screenshots will help you to understand flow of output.

Motivation

The reason behind building this is, of course we all know the saying "Time is Money" and especially for Global Companies so time-series concept can assist in this as Time Series analysis helps understand time-based patterns of a set of metric data points which is critical for any business. The basic objective of time series analysis usually is to determine a model that describes the pattern of the time series and could be used for forecasting. Techniques of time series forecasting could answer business questions like how much inventory to maintain, how much website traffic do you expect in your e-store to how many products will be sold in the next month — all of these are important time series problems to solve. It's difficult for some organizations to handling those forecasting without data science teams. Most important reason for working with fbprophet is, it provides intuitive parameters which are easy to tune. Even someone like me who is in initial years of AI and who lacks deep expertise in time-series forecasting models can use this to generate meaningful predictions for a variety of problems in business scenarios. Benefits of working with fbprophet is, very fast, an additive regression model where non-linear trends are fit with yearly, weekly, and daily seasonality, then Prophet automatically detects changes in trends by selecting changepoints from the data and robust to missing data. Hence, I continue to gain knowledge while practicing the same and spread literary wings in tech-heaven.

Technical Aspect

Pandas module mainly works with the tabular data. It contains Data Frame and Series. Pandas is 18 to 20 times slower than Numpy. Pandas is seriously a game changer when it comes to cleaning, transforming, manipulating and analyzing data.
Matplotlib is used for EDA. Visualization of graphs helps to understand data in better way than numbers in table format. Matplotlib is mainly deployed for basic plotting. It consists of bars, pies, lines, scatter plots and so on. Inline command display visualization inline within frontends like in Jupyter Notebook, directly below the code cell that produced it.

To use Prophet for forecasting, first, a Prophet() object is defined and configured, then it is fit on the dataset by calling the fit() function and passing the data. The Prophet() object takes arguments to configure the type of model you want, such as the type of growth, the type of seasonality, and more.

Time-series data is a sequence of observations stored in time order. Time-series data often stands out when tracking business metrics, monitoring industrial processes.

Installation

Using intel core i5 9th generation with NVIDIA GFORECE GTX1650.
Windows 10 Environment Used.
Already Installed Anaconda Navigator for Python 3.x
The Code is written in Python 3.8.
If you don't have Python installed then please install Anaconda Navigator from its official site.
If you are using a lower version of Python you can upgrade using the pip package, ensuring you have the latest version of pip, *python* -m pip install --*upgrade pip and press Enter*.

Run/How to Use/Steps

Keep your internet connection on while running or accessing files and throughout too.
Follow this when you want to perform from scratch.

Open Anaconda Prompt, Perform the following steps:

Open Anaconda Prompt with 'Run as Administrator' by Right-clicking on it.

cd <PATH>
pip install fbprophet
pip install pandas
pip install matplotlib
pip install pystan
pip install ephem

You can also create requirement.txt file as, pip freeze > requirements.txt

run files.

Follow this when you want to just perform on local machine.
Download ZIP File.
Right-Click on ZIP file in download section and select Extract file option, which will unzip file.
Move unzip folder to desired folder/location be it D drive or desktop etc.
Open Anaconda Prompt, write cd <PATH> and press Enter.

eg: cd C:\Users\Monica\Desktop\Projects\Python Projects 1\15)Feature_Engineering+Selection+Importance\ Forecasting_TimeSeries

In Anconda Prompt, pip install -r requirements.txt to install all packages.
Open in Jupyter Notebook, <filename>.ipynb
That is,

Open in Jupyter Notebook, 1)Forecasting_TimeSeries_with_fbprophet.ipynb

This takes monthly-milk-production-pounds.csv file as input dataset.
Please be careful with spellings or numbers while typing filename and easier is just copy filename and then run it to avoid any silly errors.
Note: cd <PATH>
[Go to Folder where file is. Select the path from top and right-click and select copy option and paste it next to cd one space <path> and press enter, then you can access all files of that folder] [cd means change directory]

Directory Tree/Structure of Project

Folder: 15)Feature_Engineering+Selection+Importance > Forecasting_TimeSeries

1)Forecasting_TimeSeries_with_fbprophet.ipynb

To Do/Future Scope

Can use other library for same dataset.

Technologies Used/System Requirements/Tech Stack

Credits

Krish Naik Channel

https://towardsdatascience.com/a-quick-start-of-time-series-forecasting-with-a-practical-example-using-fb-prophet-31c4447a2274