// Thursday, November 18, 2021

FB's Prophet VS. ARIMA : Loser Chugs The Beer Errors!

A Time-Series Project

What is PROPHET?

CHEERS!
CHEERS!
CHEERS!

- Open Source
- Seasonality
- Holiday Effects

- Additive Regression Model
- Robust to Missing Data and Outliers
- Curve Fitting

What is PROPHET?

CHEERS!
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$$y(t) = g(t) + s(t) + h(t) + \epsilon(t)$$

Growth

Models the overall trend of the data

Seasonality

Models seasonality using Fourier Series as a function of time

Holidays

Adjusts growth and seasonality terms based on pre-specified holiday effects

What is ARIMA?

$$y'_t = c + \sum_{i=1}^{p} \phi_i y'_{t-i} + \sum_{i=1}^{q} \theta_i \varepsilon_{t-i} + \varepsilon_t$$

P

number of observations from past time values used to forecast future values

D

number of differences needed to make the time series stationary

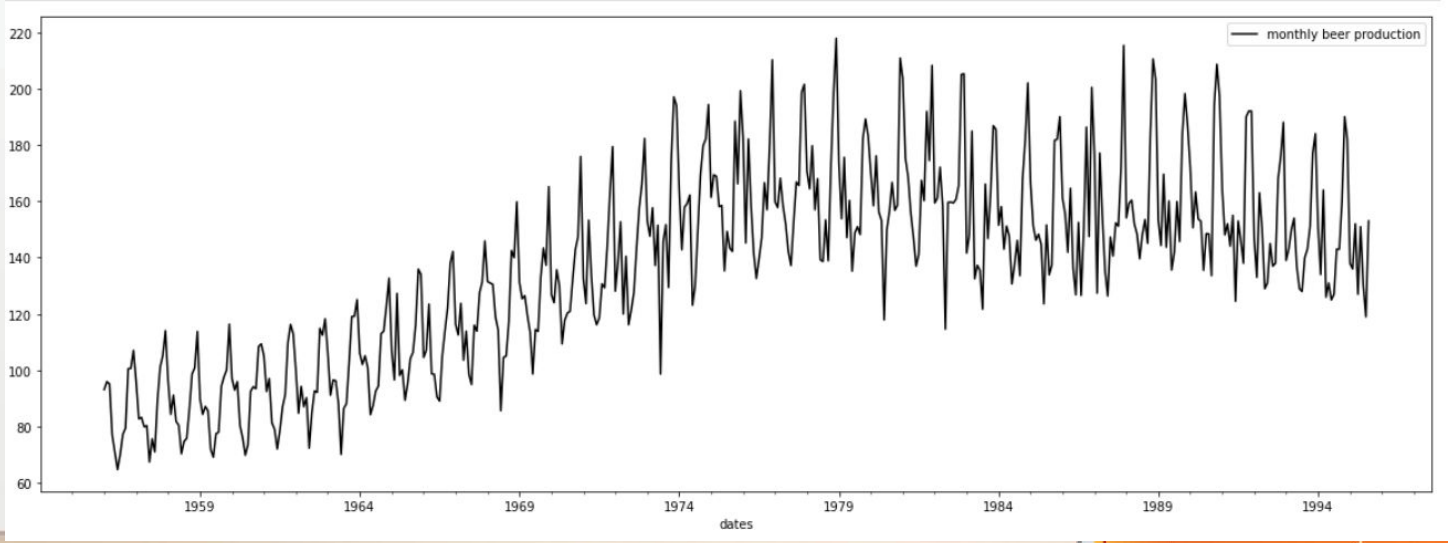
Q

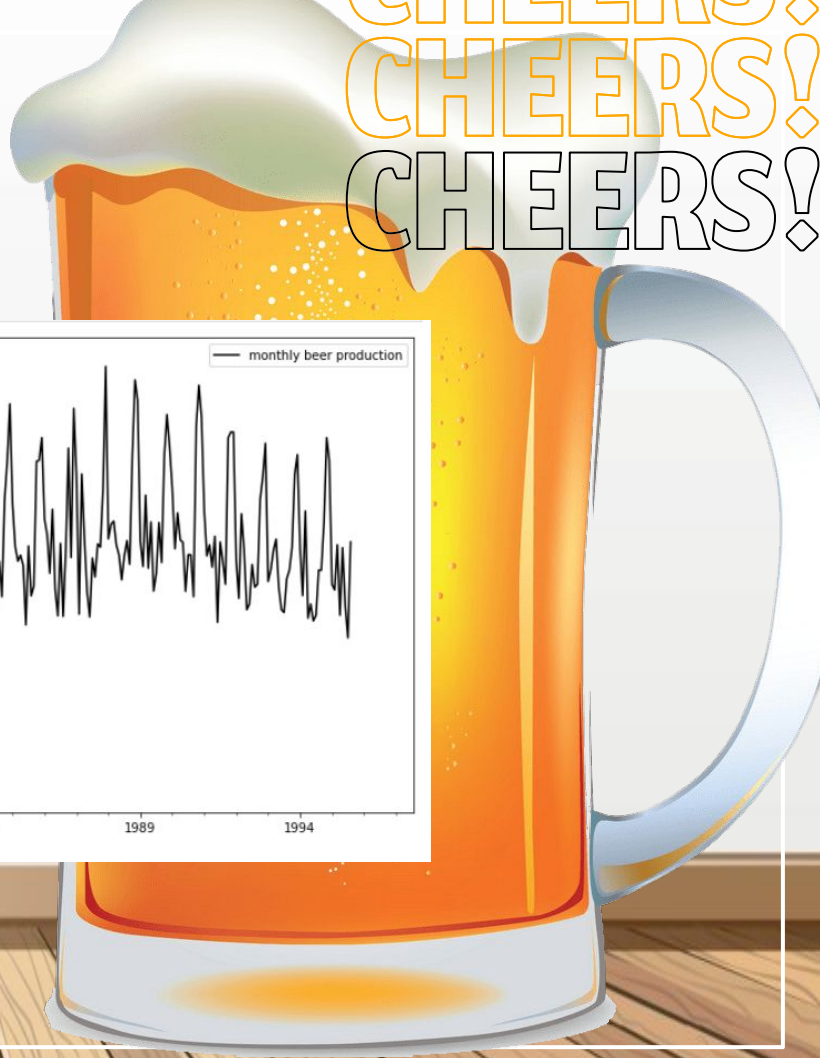
the moving average of the previous forecast errors in our model, or the lagged values of the error term.

DATASET

Month	Monthly beer production
1956-01	93.2
1956-02	96
1956-03	95.2
1956-04	77.1
1956-05	70.9
1956-06	64.8
1956-07	70.1
1956-08	77.3
1956-09	79.5
1956-10	100.6

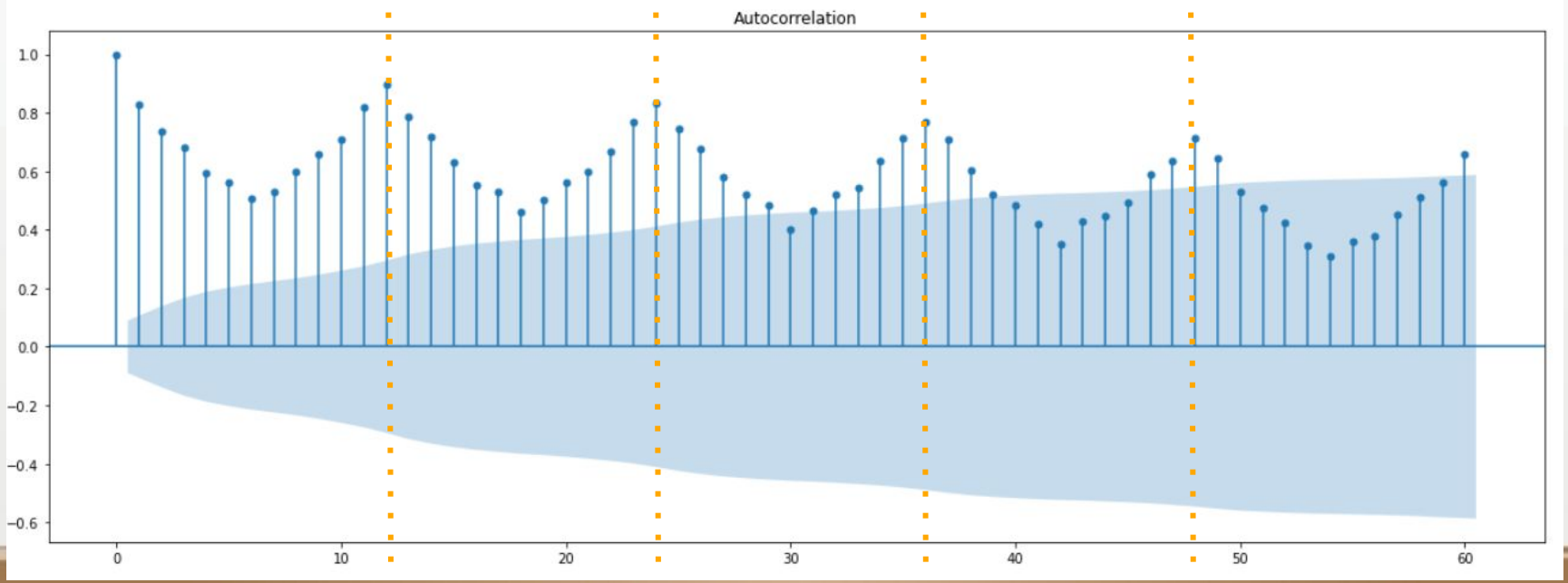
DATASET


monthly beer production
220
200
180
160
140
120
100
80
60
1959
1964
1969
1974
1979
1984
1989
1994
dates


CHEERS!
CHEERS!
CHEERS!

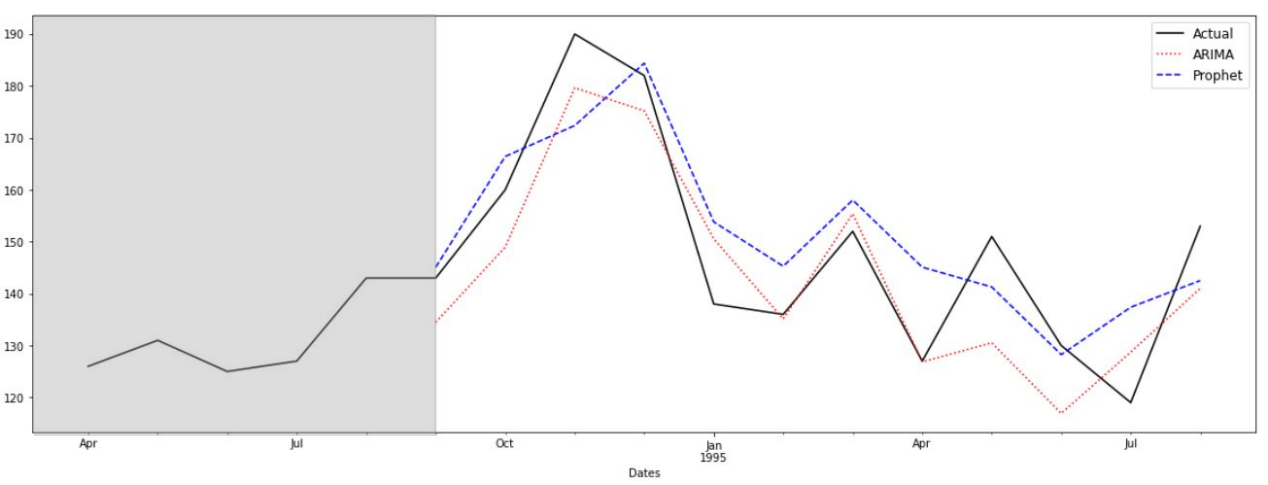
EDA

CHEERS!
CHEERS!
CHEERS!



MODEL RESULTS

CHEERS!
CHEERS!
CHEERS!



Average MAE

9.08 ARIMA

9.84 PROPHET

Key Takeaways

NEW TSA algorithm

Prophet is intuitive and easy to use

ARIMA and Prophet Results are Comparable

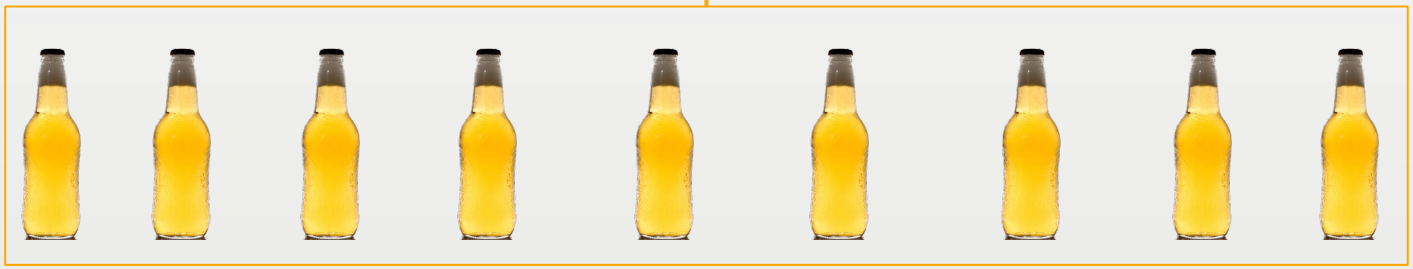
The MAEs are quite close with each other!

Prophet Performance

The dataset itself may not have enough seasonality and trend changes

CHUG!
CHUG!
CHUG!

CHUG!
CHUG!
CHUG!



Thank You!