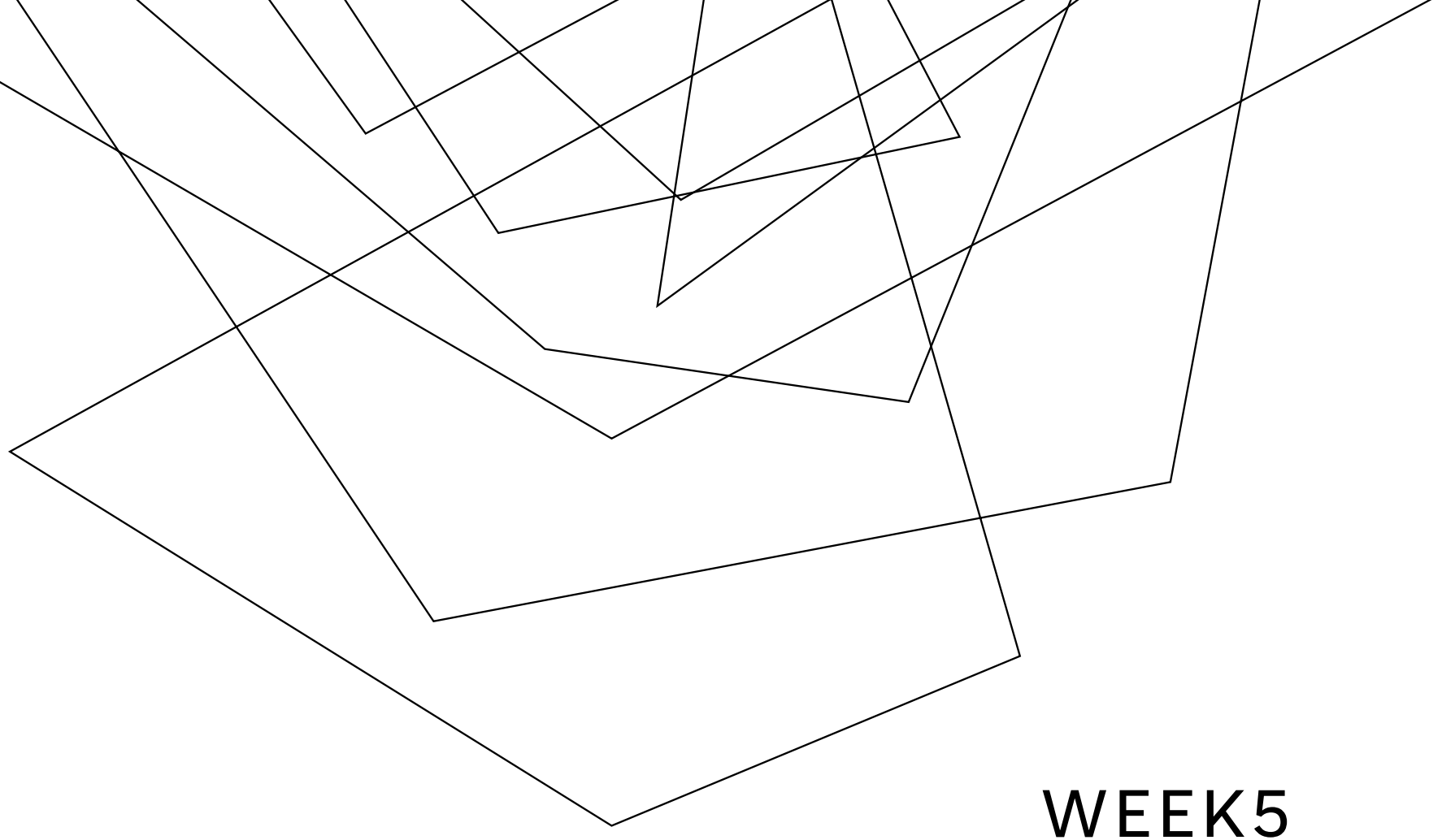
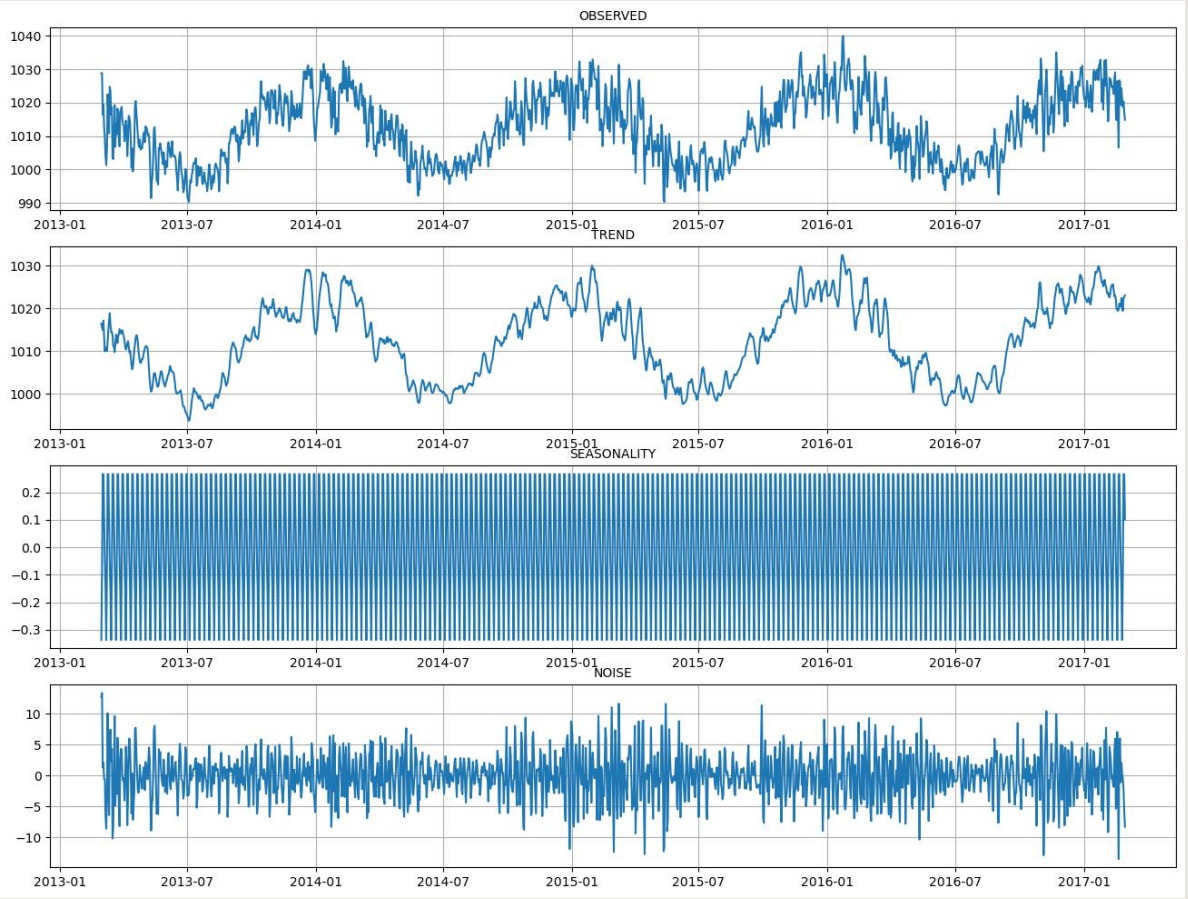


WEEK5
TIME SERIES

6438169421 Pattaradanai Lakkananithiphan

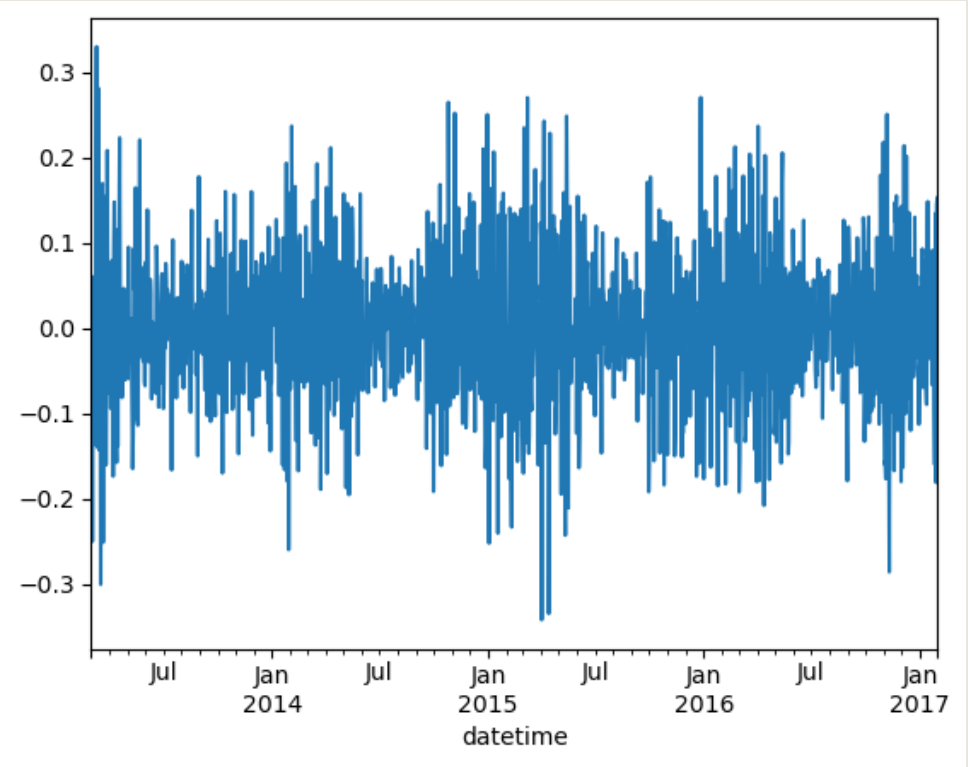
ATTRIBUTE, VISUALIZATION, & GROUPING

- Univariate -> “PRES” column
- Use the [year,month,day,hour] columns to make a datetime index
- Drop all other columns except “PRES”
- Group the rows daily using an average of each group => “PRES_avg”
- The fluctuation does not increase with time -> additive model
- The plot of “PRES_avg” ->



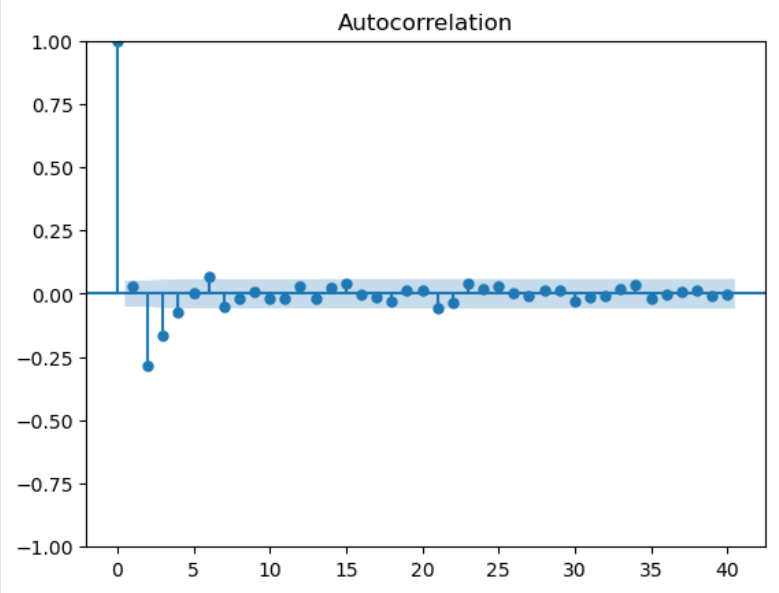
PREPROCESSING

- Split the test set from 1st Feb 2017 onward
- Using MinMaxScaler, scale “PRES_avg”
- Create a new column “p_d1” which is the different between today’s value and yesterday’s value
- The plot of “p_d1” ->

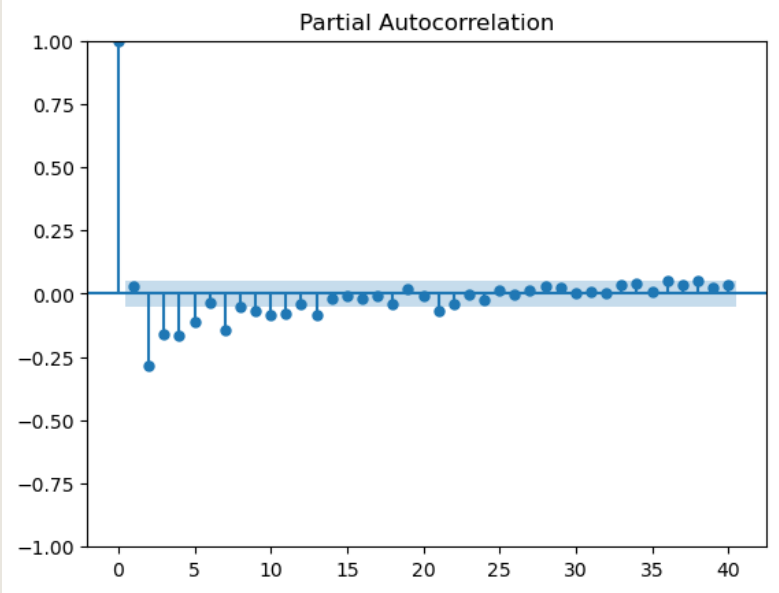


PACF, ACF, AND STABILITY

ACF -> choose q = 3

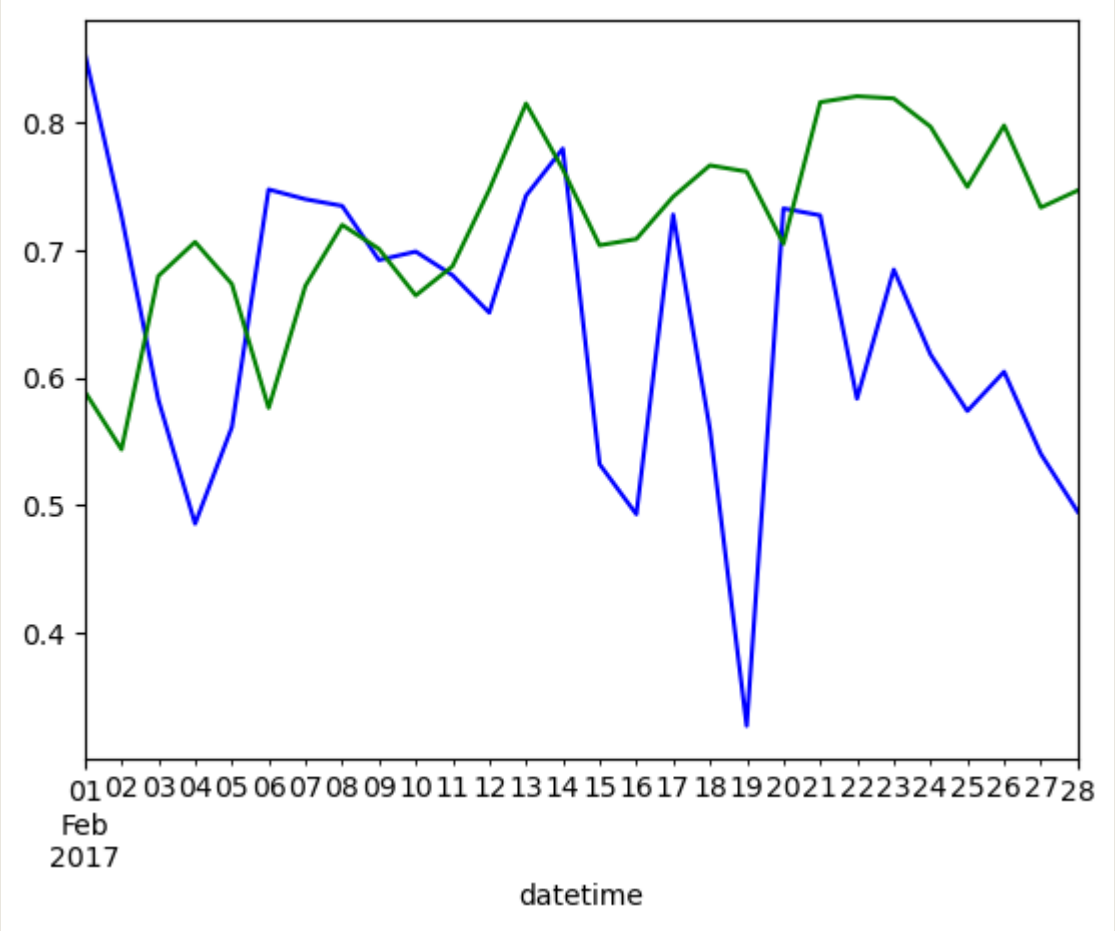


PACF -> choose p = 7



ALSO, THE DATA IS STATIONARY AT D = 1

ARIMA



ARIMA USING THE ORDER (7,1,3)

TEST (BLUE)

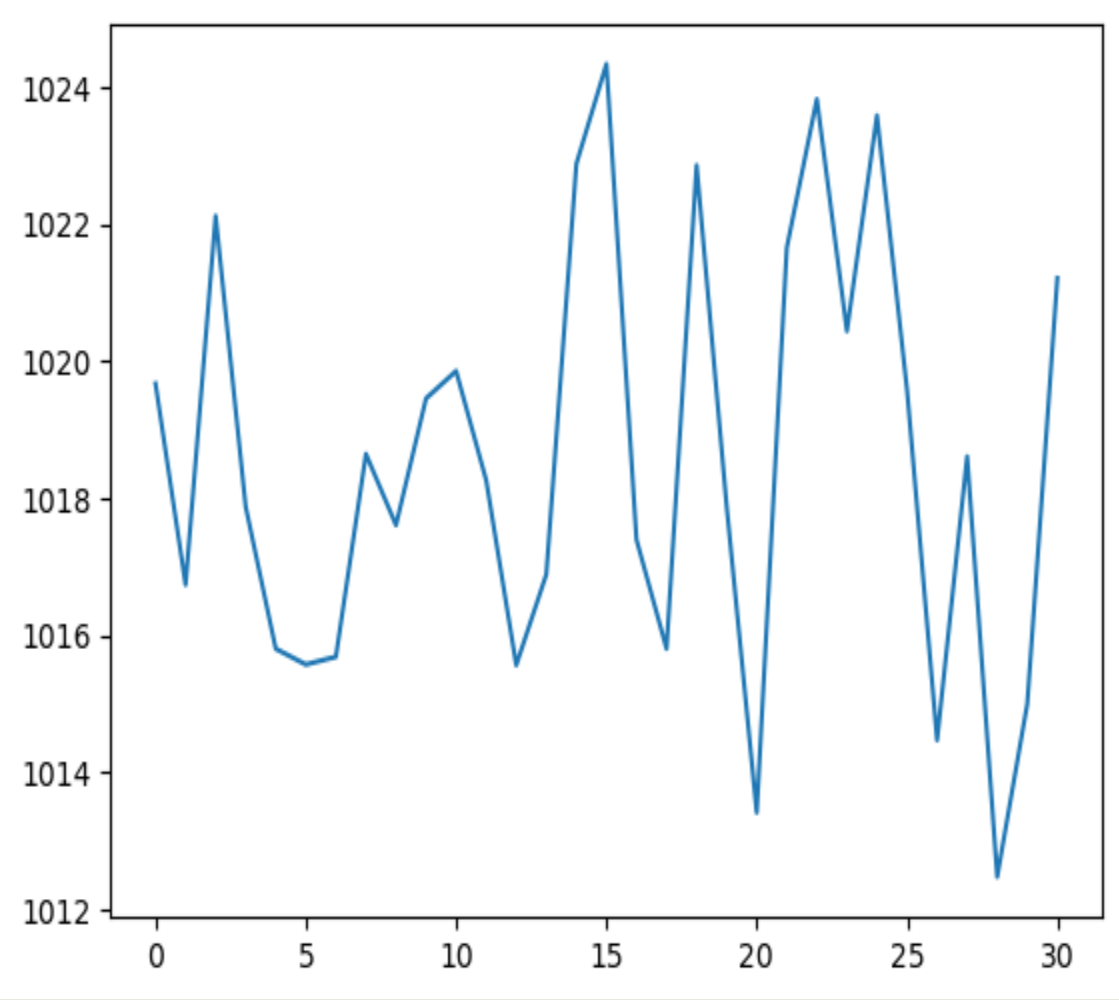
PREDICTED (GREEN)

NOTE: THE NUMBERS ARE SCALED

SARIMAX Results			
Dep. Variable:	PRES_avg	No. Observations:	1433
Model:	ARIMA(7, 1, 3)x(1, 1, [], 30)	Log Likelihood	1321.138
Date:	Fri, 09 Feb 2024	AIC	-2618.277
Time:	13:57:51	BIC	-2555.329
Sample:	03-01-2013	HQIC	-2594.747
	- 01-31-2017		
Covariance Type:	opg		

```
MAPE: 0.2534698542146194
```

ARIMA FOR PREDICTION (RETRAIN WITH THE ENTIRE SET TO PREDICT MARCH)



EVALUATION

- THE RESULTS ARE USABLE BUT NOT GOOD
- THE MODEL DOES NOT CAPTURE THE NUANCES OF THE DATA
- MAYBE TO PREDICT MONTH WE SHOULD GROUP BY MONTH INSTEAD OF DAY

THE GRAPH ON THE LEFT REPRESENTS THE DAILY AVERAGE PRESSURE (REVERSE SCALED) FOR THE ENTIRE MONTH OF MARCH 2017

SARIMAX Results

Dep. Variable:	PRES_avg	No. Observations:	1461
Model:	ARIMA(7, 1, 3)x(1, 1, [], 30)	Log Likelihood	1329.999
Date:	Fri, 09 Feb 2024	AIC	-2635.999
Time:	14:08:48	BIC	-2572.814
Sample:	03-01-2013	HQIC	-2612.404
	- 02-28-2017		