Seasonal ARIMA

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Seasonal AutoRegressive Integrated Moving **Averages**

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Essentially a way to do time-series forecasting

Parameters (p, d, q)

p is the auto-regressive part of the model. It allows us to incorporate the effect of past values into our model.

- Intuitively, this would be similar to stating that it is likely to be warm tomorrow if it has been warm the past 3 days.

d is the integrated part of the model. This includes terms in the model that incorporate the amount of differencing (i.e. the number of past time points to subtract from the current value) to apply to the time series.

- Intuitively, this would be similar to stating that it is likely to be same temperature tomorrow if the difference in temperature in the last three days has been very small.

q is the moving average part of the model. This allows us to set the error of our model as a linear combination of past error values.

ARIMA(p,d,q)(P,D,Q)s

- (p, d, q) are the non-seasonal parameters
- (P, D, Q) are the seasonal parameters
- s is periodicity (ex. 12 for monthly)

Lots more resources

https://www.digitalocean.com/community/tutorials/a-guide-to-time-series-forecasting-with-arima-in-python-3

http://www.statsmodels.org/stable/generated/statsmodels.tsa.statespace.sarimax.SARIMAX.html

https://bicorner.com/2015/11/16/time-series-analysis-using-ipython/

https://onlinecourses.science.psu.edu/stat510/node/67

http://www.blackarbs.com/blog/time-series-analysis-in-python-linear-models-to-garch/11/1/2016

http://people.duke.edu/~rnau/whatuse.htm

http://machinelearningmastery.com/basic-feature-engineering-time-series-data-python/

http://machinelearningmastery.com/time-series-forecasting-supervised-learning/