LVC 3 - Glossary of Notation

X = Random Variable

X_t = Random Variable at time t

h = Lag value

$\forall$ = Indicates “for all”

$E(X_t)$ = Expected value of Stochastic process X_t

μ = Mean of Stochastic process is constant value

t_1, t_2 = t_1 and t_2 are the two different timestamps

Σ = Summation

$R_x(t_1, t_2)$ = AutoCovariance

λ = Window size of the time series (the number of data points which we choose)

N = The total number of samples

$\hat{\mu}$ = The summation of X values ranging from λ to $N - 1$ divided by the subtraction of total number of samples and λ

$\tau = t_1 - t_2$, i.e, difference between the past value and the present value

$\hat{R}_X(\tau)$ = Sample autocovariance for each λ

S_t = Seasonal Component of the time series

k = Seasonality period

Y_t = Sequence of random variables

$\widehat{Y}_t$ = Time series after applying smoothing (removing the fine-grained variation between time stamps)

γ_h = The periodic regression coefficient of S_{t+h} in order to remove seasonality from the data

w_t = White Noise

σ^2 = Variance

$\delta_{t1\ -\ t2}$ = Delta, i.e., change in time

p = The number of past orders to be included in the Auto Regressive (AR) model

a_i = Coefficients of the Auto Regressive model

z = Variable of the polynomial

b_i = Coefficients of the Moving Average model

q = The order of the Moving Average (MA) model

$X_t - X_{t-1}$ = First Order differencing

$A(z) = A(z)$ is a matrix where each row acts as a regressor

|| || = Denotes the norm of a vector