STAT 485/685 Lecture 21 Fall 2017
27 November 2017

- I looked at $\text{Var}(Y_{T+\ell} - \hat{Y}_{T+\ell})$ for a couple of simple models.
- I explained how to use that forecast error variance to produce an interval for $Y_{T+\ell}$ of the form

$$\hat{Y} + T + \ell \pm z_{\alpha/2}\sqrt{\hat{\text{Var}}(Y_{T+\ell} - \hat{Y}_{T+\ell})}$$

- For instance for a random walk $Y_{t+1} = Y_t + \epsilon_{t+1}$ we have

$$\hat{Y}_{T+\ell} = Y_T$$

and

$$Y_{T+\ell} = \hat{Y}_{T+\ell} = \epsilon_{T+\ell} + \epsilon_{T+\ell-1} + \cdots + \epsilon_{T+1}.$$

- Then

$$\text{Var}(Y_{T+\ell} - \hat{Y}_{T+\ell}) = \ell\sigma^2.$$

- Our interval is

$$\hat{Y}_{T+\ell} \pm z_{\alpha/2}\hat{\sigma}\sqrt{\ell}.$$

- I emphasized the need to assume that ϵ_t is Normal in this method.
- I talked about forecasting a transform of Y, then getting a prediction interval then undoing the transformation.
- We have finished Chapter 9. On Thursday I will run code and discuss residual analysis.
- Monday 4 Dec is review.
- The last assignment has been posted; it is due 4 December.
- Handwritten slides.
- `R` code for next lecture.