Assessing Accuracy of Estimation Of Curves

For least squares estimation we assume that residuals (the difference between the function at the observed time and the value of observed at that time) should be i.i.d random normal variables with constant variance. So can assess these residuals in the usual way

Minimising SSE will minimise the residuals to be as cose to 0 as possible and we don’t want that as we think there is error associated with the observations and so fitting to our data too tightly would give a fit that is too skewed to our observed data in particular data instead of assuming all observations possible will have an error associated and that is why we smooth. Also often will make these errors very very close to 0 because of basis systems.

For smoothing? I think the errors are also normally distributed with constant variance

GCV and df come into play a bit

In both smoothing methods assume that residuals are uncorrelated. Can test correlation of errors probably.

Are errors the same for each curve? Like do they all have to have the same assessed variance.