ACS234
Maths and Data Modelling

Tutorial 6
Wednesday 1pm online

Done in Lecture (week 6/7)

- General Linear Regression
- Non Linear Regression

General Linear Regression

$$Y = X\hat{a} + e \qquad \hat{a} = (X'X)^{-1}X'Y$$

Linear means the response Y is a linear function with the unknown parameter a.

Linear Regression with Nonlinear Terms, example : $y = a_0 + a_1 x + a_2 e^{-x} = Xa$

$$X = \begin{pmatrix} 1 & x_0 & e^{-x_0} \\ 1 & x_1 & e^{-x_1} \\ 1 & x_2 & e^{-x_2} \\ 1 & x_3 & e^{-x_3} \end{pmatrix}$$

Exercice 1

Non Linear Regression

the response Y is a non linear function with the unknown parameter a

$$\hat{a} = (X'X)^{-1}X'Y$$

Non Linear Regression with Nonlinear Terms $y = a_0 + e^{-a_1 x}$

We want to minimise the difference between the response y and the estimated y induced by the model.

Exercice 2