0.1 Bayesian regression

The models considered in this last section are linear regression models. The main property of such models is that the prediction $y(x;w)$ is a linear function of weights

$$y(x,w) = \sum_{j=1}^{j=N} w_j \phi_j(x) + w_0$$

where $\phi_j(x)$ are basis functions

The above expression can be written in matrix form by introducing a dummy basis function $\phi_0(x) = 1$ to account the parameter w_0 :

$$y(x,w) = \sum_{j=0}^{j=N} w_j \phi_j(x) = \mathbf{w}^T \Phi$$

where $\Phi = (\phi_0, \phi_1 ... \phi_M)$ and $\mathbf{w} = (w_0, w_1 .... w_M)$(M denotes the number of basis functions used)

0.1.1 Part A

The object of Part A is to compare the performance of the prediction $y(x;w)$ of different linear models who employ different numbers of basis function. In other words, the models are distinguished by M(the number of basis functions used)

Increasing the number k , increases the number of basis functions used

subsectionPart C

Figure 1: The variance of the posterior at k=1 against N

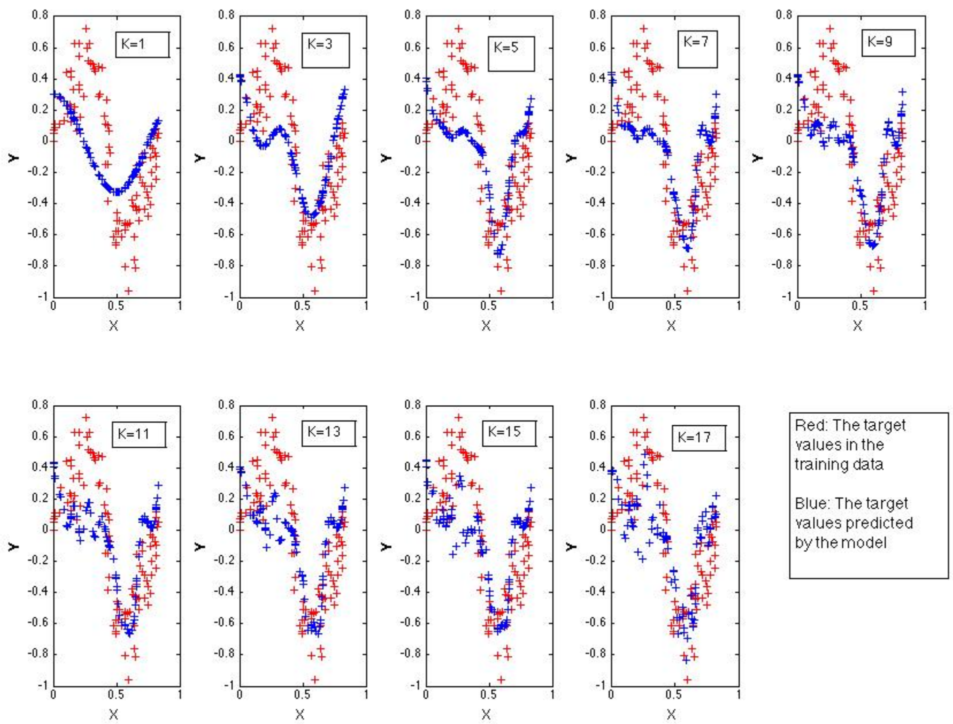

Figure 2: The variance of the posterior at k=1 against N

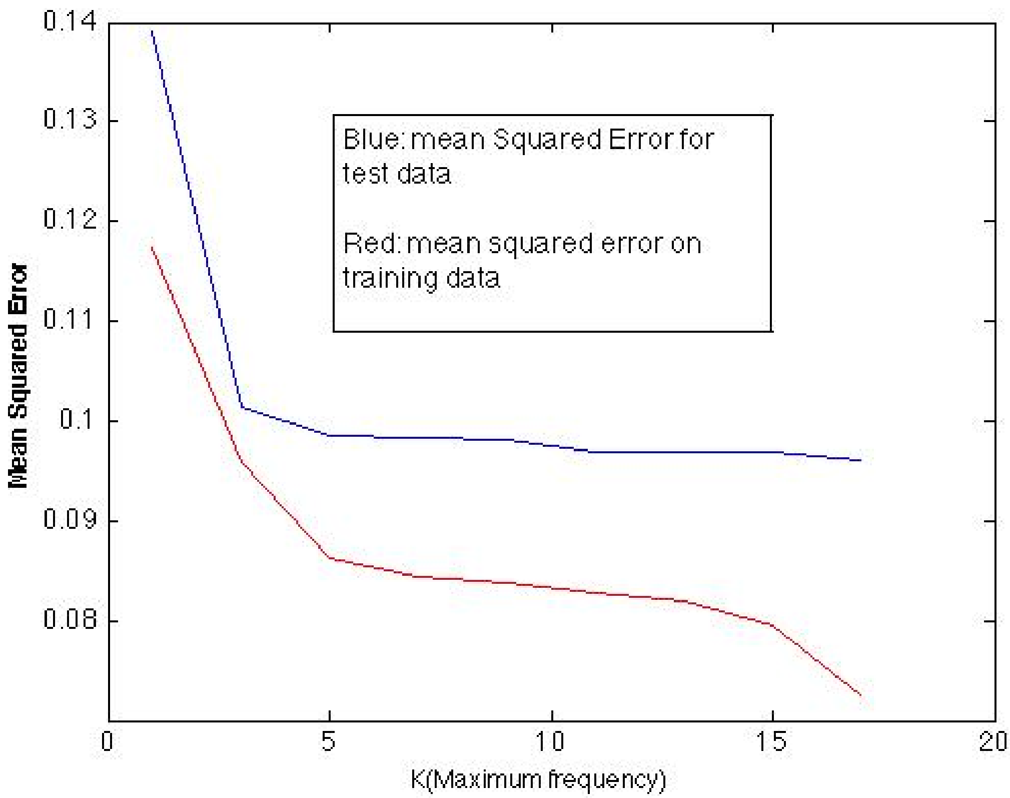

Figure 3: The variance of the posterior at k=1 against N