Machine Learning Excercise 1

Laszlo Korte, MtrNr. 6329857

Universität Hamburg — October 23, 2019

$$f(x) = \begin{bmatrix} -0.041160704244956436\\ 10.562523298395087\\ -31.341382533745737\\ 21.000362862248476 \end{bmatrix}^T \begin{bmatrix} x^0\\ x^1\\ x^2\\ x^3 \end{bmatrix}$$

The 3-degree polynomial f(x) has been computed using stochastic gradient descent algorithm using a learning rate of $\alpha = 0.2$ yielding a final error of 1.756246 after 1500 iterations.

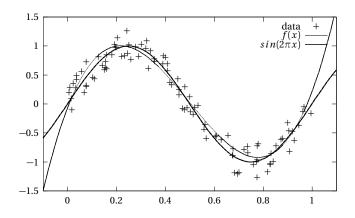


Figure 1: data points, f(x), and $\sin(2\pi x)$

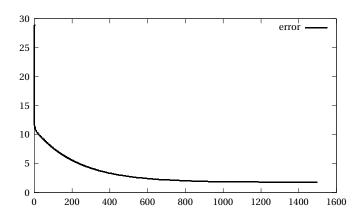


Figure 2: error after n = 1500 iterations