

Assignment 04"Supervised Learning - Linear Regression"Reference

"Mathematics for Machine Learning"  
by Marc Peter Deisenroth, A. Aldo Faisal  
and Cheng Soon Ong, Cambridge Univ. Press,  
2020 (available as free download)

<https://mml-book.com>

Question 1

Consider the Table Data 8.2. Construct a  
Regression Model (Linear) for the labeled

data Salary as a function of

(i) Age ; (ii) Age, Degree; (iii) Age, Degree, Gender

by considering the noise in the labeled  
observation  $\sim \mathcal{N}(0, 1)$ . Compute Salary at  
Age = 60.



## Question 2

Compare the following Models:

(i) Linear Regression as straight line fitting

(ii) Maximum Likelihood Estimate (MLE)

and

(iii) Maximum A Posteriori Estimate (MAP)

taking  $p(\theta) \sim \mathcal{N}(0, \Sigma)$

$\uparrow$

Covariance Matrix.

for the Question 1 (i), (ii) and (iii)  
Cases.

