

Assignment 2 Solutions

Important Note:

- Some questions may have multiple valid proofs on Canvas. In such cases, grade only one of the proofs and leave the other completely blank in Canvas.
 - There may be some other valid solutions in your peers' submissions that are not included in this PDF. You are responsible for reporting these new solutions so that they can be assessed by the TA team, and the corresponding rubrics for these solutions will be released as soon as possible.
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1 Linear Regression

a) *Gaussian Noise Regression Model*

- (i) **Solution:**
- (ii) **Solution:**

b) *Weighted Linear Regression*

- (i) **Solution:**
- (ii) **Solution:**

2 Bayesian Regression, Information Measures, and the Bias–Variance Trade-off

a) **Solution:**

b) **Solution:**

c) **Solution:**

d) **Solution:**

e) **Solution:**

- (i)
- (ii)

3 Neural Network and Non-Linear Optimizations

a) *Neural Networks*

(i) **Solution:**

(ii) **Solution:**

(iii) **Solution:**

b) *Non-linear Optimization*

(i) **Solution:**

(ii) **Solution:**

(iii) **Solution:**

(iv) **Solution:**