16. Exercise: Choice of representations

Exercises due Apr 15, 2020 05:29 IST *Completed*

Exercise: Choice of representations

1/1 point (graded)

We wish to estimate an unknown quantity Θ. Our measuring equipment produces an observation of the form $X = \Theta^3 + W$, where W is a noise term which is small relative to the range of Θ. Which type of linear estimator is preferable in such a situation?

- $\widehat{\Theta} = aX + b$
- $\widehat{\Theta} = aX^3 + b$
- $\widehat{\Theta} = aX^{1/3} + b$ ✔

Solution:

If the noise W were completely absent, we would estimate Θ by letting $\widehat{\Theta} = X^{1/3}$. In the presence of small noise, our estimator should again have a similar form, which argues in favor of the third option.

Submit You have used 1 of 1 attempt

Answers are displayed within the problem

Discussion

Hide Discussion

Topic: Unit 7: Bayesian inference:Lec. 17: Linear least mean squares (LLMS) estimation / 16. Exercise: Choice of representations

Show all posts by recent activity

- Don't overthink this question. — 15
  And may the force be with you.
- Would a more generic estimator be better than all the 3 options? — 1
  In the previous lecture segment, the professor said that a more general class of estimators usually gives ...
- hint — 2
  "W is a noise term which **is small relative to the range**"