

<u>Course</u> > <u>Unit 7:</u> ... > <u>Lec. 17:</u>... > 16. Exe...

## 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  $\Theta$ . 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  $\Theta$ . Which type of linear estimator is preferable in such a situation?

$$igcirc \widehat{\Theta} = aX + b$$

$$igcirc \widehat{\Theta} = aX^3 + b$$

$$igotimes \widehat{\Theta} = a X^{1/3} + b$$



## Solution:

If the noise W were completely absent, we would estimate  $\Theta$  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

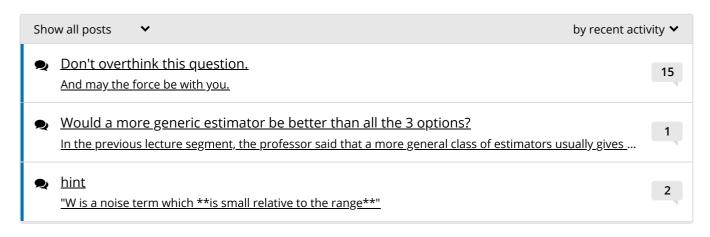
**1** Answers are displayed within the problem



## Discussion

**Hide Discussion** 

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



© All Rights Reserved

