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12. Exercise: Multidimensional challenges

Exercises due Apr 15, 2020 05:29 IST Completed

Exercise: Multidimensional challenges

2/2 points (graded)

Suppose that f_{Θ} and $f_{X|\Theta}$ are described by simple closed-form formulas. Suppose that Θ is one-dimensional but X is high-dimensional.

a) Suppose that a specific value x of the random variable X has been observed. Is it true that the calculation of the LMS estimate will always involve only ordinary integrals (integrals with respect to only one variable)?

Yes ▼

✓ Answer: Yes

b) Is it true that the calculation of the mean squared error of the LMS estimator will always involve only ordinary integrals (integrals with respect to only one variable)?

No ▼

✓ Answer: No

Solution:

a) The denominator in Bayes' rule involves an integral with respect to θ . Once the conditional PDF is available, the LMS estimate is calculated by integrating again over the one-dimensional variable θ .

b) In this case, we need to average the conditional variance over all possible values of x , and this will involve a multiple integral.

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You have used 1 of 1 attempt

i Answers are displayed within the problem



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✓ +Ex : Multidimensiona Challenges
Hi, The solution for (a) mentions that : 'Once the conditional PDF is available, the LMS estimate is calculat...

3

? Meaning of "ordinary integral"

3

✓ part b - ask for overall mean squared error or conditional mean squared error?
Hi, I got a question for part b. Does it ask for overall mean squared error or conditional mean squared er...

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? Assumptions?

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