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Properties of Kernel Regression - Quiz

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Question 1

1/1 point (graded)

Which of the following is true in the context of kernel regressions? (Select all that apply)

- ☒ a. As bandwidth goes to 0, bias goes to 0.
- ☒ b. As your sample size increases, your variance decreases.
- ☐ c. As your bandwidth increases, your variance increases.
- ☒ d. As your sample size decreases, bias increases, holding your bandwidth fixed.
- ☒ e. As your bandwidth decreases, your variance increases, .




Explanation


As Professor Duflo explained in class, there are 3 things to keep in mind for kernel regressions:

- ▶ [Module 5: Moments of a Random Variable, Applications to Auctions, & Intro to Regression](#)
- ▶ [Module 6: Special Distributions, the Sample Mean, the Central Limit Theorem, and Estimation](#)
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Causality

Finger Exercises due Nov 21, 2016
at 05:00 IST 

Analyzing Randomized Experiments

Finger Exercises due Nov 21, 2016
at 05:00 IST 

1. As your bandwidth decreases, your bias goes to 0.
2. However, there is a trade off between bias and variance: For a fixed sample size, decreasing your bandwidth will lead to over fitting (high variance).
3. As your sample size increases, your precision increases, so essentially you can reduce your bandwidth to decrease bias, at a lower cost in terms of variance.

Given this, A is clearly correct and B immediately follows from the 3rd point above. C says the opposite of B, therefore must be wrong. As you reduce your sample size, you will need to reduce your bandwidth in order to hold your bias fixed. A and E are both saying the same thing, which is consistent with the second point. The reason C is incorrect, is that for a fixed sample size there is a trade-off

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You have used 1 of 2 attempts

✓ Correct (1/1 point)


Question 2

1.0/1.0 point (graded)


Why do we use cross-validation?

- ☐ a. To optimize the trade-off between bias and variance.
- ☐ b. To select the optimal bandwidth.
- ☐ c. To minimize mean squared error, which takes into account both bias and variance.

Use of Randomization and Nonparametric Regression

Finger Exercises due Nov 21, 2016
at 05:00 IST 

Module 8: Homework

Homework due Nov 14, 2016 at
05:00 IST 

- ▶ [Module 9: Single and Multivariate Linear Models](#)
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☒ d. All of the above. ✓

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Discussion

Topic: Module 8 / Properties of Kernel Regression - Quiz

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