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5.4.R1

0/1 point (graded)

One way of carrying out the bootstrap is to average equally over all possible bootstrap samples from the original data set (where two bootstrap data sets are different if they have the same data points but in different order). Unlike the usual implementation of the bootstrap, this method has the advantage of not introducing extra noise due to resampling randomly. (You can use "^" to denote power, as in "n^2")

To carry out this implementation on a data set with n data points, how many bootstrap data sets would we need to average over?

n^2

✖ **Answer:** n^n

n^2

Explanation

Completely removing the bootstrap resampling noise is usually not worth incurring the extreme computational cost. If B is large, but still less than n^n, random resampling gives a good Monte Carlo estimate of the idealized bootstrap estimate for all n^n data sets.

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Answers are displayed within the problem

https://groups.google.com/forum/#!topic/sci.stat.consult/V0ESspqcp7A
https://gerardnico.com/statistics/model/building/bootstrap
https://www.coursehero.com/file/p5nb3jig/True-or-false-a-correct-cross-validation-procedure-will-possibly-choose-a/

if data set has 3 observations:

ref:
https://gerardnico.com/statistics/model/building/bootstrap

observations.	X.	Y
1	x1	y1
2	x2.	y2
3	x3.	y3

observations:	X.	Y
Number Series.		
1 2 3		
	x1.	y1
	x2.	y2
	x3.	y3
3 1 2		
	x3.	y3
	x1.	y1
	x2.	y2
2 3 1		
	x2.	y2
	x3.	y3
	x1.	y1
1 3 2		
	x1.	y1
	x3.	y3
	x2.	y2
3 2 1		
	x3.	y3
	x2.	y2
	x1.	y1
2 1 3		
	x2.	y2
	x1.	y1
	x2.	y2
Same numbers		
1 1 1		
	x1.	y1
	x1.	y1
	x1.	y1
2 2 2		
	x2.	y2
	x2.	y2
	x2.	y2
3 3 3		
	x3.	y3
	x3.	y3
	x3.	y3
Double 1 combinations		
1 1 2		
	x1.	y1
	x1.	y1
	x2.	y2
1 1 3	.	.
1 2 1	.	.
1 3 1	.	.
2 1 1	.	.
3 1 1	.	.
Double 2 combinations	.	.
2 2 1	.	.
2 2 3	.	.
1 2 2	.	.
3 2 2	.	.
2 3 2	.	.
2 1 2	.	.
Double 3 combinations	.	.
3 3 1	.	.
3 3 2	.	.
1 3 3	.	.
2 3 3	.	.
3 1 3	.	.
3 2 3	.	.
	.	.
	.	.
	.	.

get average & variance of X, Y, => get cov, then alpha_1

=> get cov, then alpha_2

=> get cov, then alpha_3

=> get cov, then alpha_27

6 bootstrap data sets

3 bootstrap data sets

6 bootstrap data sets

6 bootstrap data sets

6 bootstrap data sets

total
27 bootstrap data sets
(n^n)