UNIVERSITY OF CALIFORNIA
UC RIVERSIDE
STATISTICS DEPARTMENT SEMINAR

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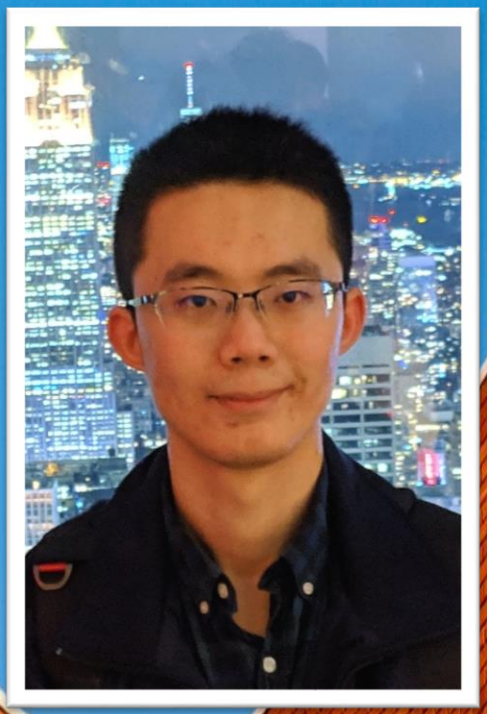

Olmsted Hall 420
January 29th 2019
3:45-4:45pm
Reception in Olmsted 1331 at 3:15 P.M.

"ON THE LENGTHS OF T-BASED CONFIDENCE INTERVALS"

FOR MORE INFORMATION ABOUT THIS SEMINAR, PLEASE VISIT
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Abstract

Given n = mk iid samples from a normal distribution with mean and variance unknown, we have two ways to construct t-based confidence intervals for mean. The traditional method is to treat these n samples as n groups and calculate the intervals. The second, and less frequently used, method is to divide them into m groups with each group containing k elements. For this method, we calculate the mean of each group, and these m mean values can be treated as iid samples from a new normal distribution. We can use these m values to construct t-based confidence intervals. Intuition tells us that, at the same confidence level, the first method should be better than the second one. Yet if we define “better” in terms of the expected length of the confidence interval, then the first method is better because the expected length of the confidence interval obtained from the first method is shorter than the one obtained from the second method. Our work proves this intuition theoretically. We also specify that when the elements in each group are correlated, the first method becomes an invalid method, while the second method can give us correct results. We illustrate this with analytical expressions.

Biography

Yu Zhang is now a doctoral student at Peking University. He is visiting The Wharton School and is working with Weijie Su this year. Yu Zhang’s current research interest is in variable selection in high dimensional data.