
STATISTICS SEMINAR

UW-Department of Statistics

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Abstract: The problem of testing multiple hypotheses with streaming (sequential) data arises in diverse applications such as multi-channel signal processing, surveillance systems, multi-endpoint clinical trials, and online surveys. In this talk, we investigate the problem under two generalized error metrics. Under the first one, the probability of at least k mistakes, of any kind, is controlled. Under the second, the probabilities of at least k_1 false positives and at least k_2 false negatives are simultaneously controlled. For each formulation, we characterize the optimal expected sample size to a first-order asymptotic approximation as the error probabilities vanish, and propose a novel procedure that is asymptotically efficient under every signal configuration. These results are established when the data streams for the various hypotheses are independent and each local log-likelihood ratio statistic satisfies a certain law of large numbers. Further, in the special case of iid observations, we quantify the asymptotic gains of sequential sampling over fixed-sample size schemes.

TITLE:

Asymptotically
Optimal Multiple
Testing with
Streaming Data

Speaker:

Yanglei Song

Department of Statistics
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Champaign-Urbana

Time & Place:

Friday, February 8,
2019 **4pm**, Room
133 SMI

Cookies & Coffee @
3:30, Rm 1210 MSC

