MICHIGAN STATE UNIVERSITY
Department of Statistics and Probability

COLLOQUIUM

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From Universal and Sequential Inference to False Discovery Rate Control with E-values

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Zoom

Abstract

This talk will gently introduce the concept of an e-value (a nonnegative random variable with expectation at most one under the null), which is an alternative to p-values, that merges frequentist, Bayesian and game-theoretic ways of thinking, and generalizes likelihood ratios and Bayes factors to nonparametric and composite settings. E-values have desirable properties for multiple testing including being automatically robust to arbitrary dependence between tests (https://arxiv.org/abs/2009.02824). To make the abstract concept of an "e-value" more concrete, I will discuss two broad settings where such e-values arise naturally, which is universal inference with the split likelihood ratio test (https://www.pnas.org/content/117/29/16880) and adaptive sequential inference in multi-armed bandits using nonnegative supermartingales (https://arxiv.org/abs/2107.07322). Extensions to estimation do exist, under the terminology "confidence sequences". In case of further interest in these topics, please check out http://stat.cmu.edu/~aramdas/sequential.html and http://stat.cmu.edu/~aramdas/multiple.html.

Zoom details can be found at: https://stt.natsci.msu.edu/stt-colloquium-zoom-info/

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