The University of Chicago
Department of Statistics
Mini-Seminar for First Year Students

OMAR DE LA CRUZ

Department of Statistics

The University of Chicago

"The Choice of a Null Hypothesis in Large-Scale Simultaneous Testing"

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110 Eckhart Hall, 5734 S. University Avenue

ABSTRACT

Research in genomics, image processing, and other fields often lead to problems that involve testing thousands or hundreds of thousands of hypotheses simultaneously. This creates challenges for the statistician, but also opens the opportunity to use procedures not available for traditional hypothesis testing. One of these involves the empirical estimation of an appropriate null hypothesis.

This talk is based on a paper by Bradley Efron, in which he introduces an empirical Bayes analysis plan for the estimation of a null hypothesis that has several advantages over the "theoretical" null. This approach uses a local version of the false discovery rate to examine the inference issues. We will use two problems from genomics to illustrate the importance of correctly choosing the null hypothesis.