



The Department of Biomedical Data Science

Presents

Bradley Efron, PhD,

Max H. Stein Professor and Professor of Statistics and of Biomedical Data Science
Stanford University

“Prediction, Estimation, and Attribution”

Thursday, October 1, 2020

2:30-3:50 PM PT

Zoom:

<https://stanford.zoom.us/j/92696098893?pwd=WSs2bFp3eVh4NTdFZVV6TXRWUTYxU>

T09

(Password: 688852)

Abstract

The scientific needs and computational limitations of the Twentieth Century fashioned classical statistical methodology. Both the needs and limitations have changed in the Twenty-First, and so has the methodology. Large-scale prediction algorithms - neural nets, deep learning, boosting, support vector machines, random forests - have achieved star status in the popular press. They are recognizable as heirs to the regression tradition, but ones carried out at enormous scale and on titanic data sets. How do these algorithms compare with standard regression techniques such as Ordinary Least Squares or logistic regression? Several key discrepancies will be examined, centering on the differences between prediction and estimation or prediction and attribution (that is, significance testing). Most of the discussion is carried out through small numerical examples. The talk does not assume familiarity with prediction algorithms.

Short Bio

Brad is Max H. Stein Professor of Humanities and Sciences, Professor of Statistics, and Professor of Biostatistics with the Department of Biomedical Data Science in the School of Medicine; he serves as Co-director of the Mathematical and Computational Sciences Program. He has held visiting faculty appointments at Harvard, UC Berkeley, and Imperial College, London. A recipient of a 2005 National Medal of Science for his contributions to theoretical and applied statistics, especially the bootstrap sampling technique, in 2014 he was awarded the Guy Medal in Gold by the Royal Statistical Society. He has been recognized with the 2018 International Prize in Statistics.