



SOCIETY OF STATISTICS, COMPUTER AND APPLICATIONS

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WEBINAR

DATE: 01-MAY-2021 (SATURDAY)

TIME: 1830 – 2000 Hrs IST

Topic: Factor selection in screening experiments

Speaker: Prof. John Stufken

Description:

Screening designs are used in design of experiments when, with limited resources, important factors are to be identified from a large pool of factors. Typically, a screening experiment will be followed by a second experiment to study the effect of the identified factors in more detail. As a result, the screening experiment should ideally screen out a large number of factors to make the follow-up experiment manageable, without screening out important factors.

The Gauss-Dantzig Selector (GDS) is often the preferred analysis method for screening designs. While there is ample empirical evidence that fitting a main-effects model can lead to incorrect conclusions about the factors if there are interactions, including two-factor interactions in the model increases the number of model terms dramatically and challenges the GDS analysis. We discuss a new analysis method, called Gauss Dantzig Selector – Aggregation over Random Models (GDS-ARM), which aggregates the effects from different iterations of the GDS analysis performed using different sets of randomly selected interactions columns each time. The GDS-ARM draws its motivation in part from random forests by building many models, and by identifying important factors after running a GDS analysis on all of these models. We will discuss the proposed method and study its performance.



**Director, Informatics and Analytics, Bank of America
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Professor John Stufken is a Fellow of both the Institute of Mathematical Statistics and the American Statistical Association and an Elected Member of the International Statistics Institute. He held the prestigious title of Rothschild Distinguished Visiting Fellow at the Isaac Newton Institute of Mathematical Sciences in Cambridge, UK. His research has primarily been in areas of design of experiments and, more recently, big data analysis. He is the author of the Springer Verlag book Orthogonal Arrays: Theory and Applications and co-editor of the Handbook of Design and Analysis of Experiments, by CRC Press.

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