



THE WEIZMANN INSTITUTE OF SCIENCE
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Machine Learning and Statistics Seminar

Room 1 ,Ziskind Building
on Wednesday, Oct 17, 2018
at 11:15

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Harmonizing Fully Optimal Designs with Classic Randomization in Fixed Trial
Experiments

Abstract:

There is a movement in design of experiments away from the classic randomization put forward by Fisher, Cochran and others to one based on optimization. In fixed-sample trials comparing two groups, measurements of subjects are known in advance and subjects can be divided optimally into two groups based on a criterion of homogeneity or "imbalance" between the two groups. These designs are far from random. This talk seeks to understand the benefits and the costs over classic randomization in the context of different performance criteria such as Efron's worst-case analysis. In the criterion that we motivate, randomization beats optimization. However, the optimal design is shown to lie between these two extremes. Much-needed further work will provide a procedure to find this optimal designs in different scenarios in practice. Until then, it is best to randomize.