

OPTIMAL DESIGN FOR POLICY LEARNING ACROSS RELATED LOCATIONS

Georgina Hall

INSEAD, France

georgina.hall@insead.edu

A firm wishes to learn the response of customers to different actions (e.g., discounts, treatments) so that it can assign, down the line, the action which maximizes the firm's monetary gain to future customers. To learn this response, the firm can run experiments where it assigns actions to different participants and observes the outcomes. This information is then used to build a model of the customer's response, which, in turn, is used for action assignment. In a budget-constrained setting where not all participants can be part of the experiment, one can wonder which participants should be selected to maximize the firm's monetary gain – a question also known as optimal design. In this talk, we consider a twist on the classical question. We assume that the firm operates across many different locations and that customers' responses are related to varying degrees across these locations. We propose a procedure, based on semidefinite programming, for selecting participants in each location, which leverages the connection between locations. In particular, we show that this procedure outperforms the setting where experiments are run in parallel in each location. This implies that the firm stands to gain from running experiments at a global level rather than locally.

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