

MARKETING COLLOQUIA

Spring 2024 - Abstract

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Where: 741 JMHH

When: 12:00 PM to 1:20 PM

ANALYZING AD IMPACTS ON PRIVACY-RESTRICTED CLICKSTREAM: AN APPLICATION OF HAWKES PROCESSES

ABSTRACT:

Website traffic data present multiple undesirable properties for traditional advertising models. Datapoints are both clumpy at high frequencies and sparse over long horizons, underpinned by a myriad of state-dependent mechanisms, and often truncated for multiple intervals. Consequently, models that are estimated in discrete-time or with simplistic state-dependence mechanisms suffer from a variety of identification and robustness concerns. This article presents a distinct approach to overcoming those difficulties with the use of Bayesian hierarchical Hawkes processes. As auto-regressive variants of Poisson processes, Hawkes models nest multiple common marketing models. Nonetheless, their more general form has seldom been studied in Marketing. This article also offers novel parametric approaches to Hawkes feedback kernels that can be used to solve for usual marketing questions in closed-form. As major extensions, we propose estimation methods for when clicks are truncated and ad deliveries are censored; the availability of such methods is paramount given changing legislative conditions in the digital marketing landscape. The model is validated through a variety of simulations and two empirical datasets.