English summaries

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Stallings automata: A roundtrip between algebra and geometry

In this paper, we review the fundamental properties of the free group and give a detailed account of Stallings's automata theory, a geometric interpretation of its subgroups. Stallings automata theory has been (and remains) immensely fruitful, both as a means of understanding classical results and as a source of new ones. We describe some of the most important applications of this theory.

Gábor Lugosi

Mean estimation: A survey of recent advances

Perhaps the most basic statistical problem is to estimate the expected value of a random variable based on independent observations of the same distribution. This seemingly simple question raises surprising difficulties both from a statistical and a computational point of view. In this paper we survey some of the recent advances in mean estimation. In particular, we describe sub-Gaussian mean estimators for possibly heavy-tailed data in both the univariate and multivariate settings. We focus on estimators based on median-of-means techniques, although other methods such as the trimmed mean and Catoni's estimator are also reviewed. We offer detailed evidence for our core findings.