Simultaneous confidence intervals in sequential estimation

Aaditya Ramdas

Carnegie Mellon University
E-mail: aaditya.ramdas@gmail.com

Abstract: A confidence sequence is a sequence of confidence intervals that is uniformly valid over all time. The advantage of a confidence sequence over pointwise intervals, is that the former are valid at stopping times (as well as post-hoc) but the latter are not. We show that at a price of about two (doubling of width), pointwise asymptotic confidence intervals can be extended to uniform nonparametric confidence sequences. Constructing the former at every time step guarantees FCR control, while constructing the latter each time step guarantees post-hoc FWER control.