Bootstrap confidence intervals.


Let $C_n$ be a confidence interval for an unknown parameter based on $n$ i.i.d. observations, whose critical values are computed from the bootstrap estimate for a Studentized statistic expressible as a function of vector means. It is shown that, under suitable regularity conditions, $C_n$ has level error $O(\log(n)^{1/2}/n)$. However, the authors do not seem to be aware of closely related work by K. Singh (see his discussion of a paper by C.-F. J. Wu [Ann. Statist. 14 (1986), no. 4, 1261–1350, see pp. 1328–1330; MR 88f:62106]) by P. Hall [ibid. 14 (1986), no. 4, 1431–1452; MR 88b:62034], and by R. Y. Liu and K. Singh [ibid. 15 (1987), no. 4, 1713–1718; MR 89b:62097]. There explicit expansions of length two for the level error of $C_n$ are established by using the concept of Cornish-Fisher expansions. In particular, it turns out that $C_n$ has level error of order $O(1/n)$. 

Michael Falk (D-EICH)