INDIAN STATISTICAL INSTITUTE

M. Stat First Year (2021)

Second Semester

Resampling Techniques Assignment

Attempt all questions

(1) Verify the results of Example 1.2 (page 7) of Shao and Tu (1995).

(2) Verify the results of Example 1.3 (page 8).

(3) Verify the results of Example 1.4 (page 10).

(4) Consider Example 2.2 (page 29). Conduct a simulation experiment with $(\gamma_0 + 0.2)\theta$ modified to $\gamma_0\theta + 0.2$ in equation (2.13), and compare your jacknife estimators of $Var(\hat{\theta})$ with possible bootstrap estimators using measures of accuracy as in Table 2.1 (page 32).

(5) Consider Example 2.3 (page 30). Assuming that ε_{ij} are normally distributed with zero mean, derive the MLEs of the parameters. Do your MLEs agree with those provided in the book? Also conduct a simulation experiment and compare your jacknife estimators of $Var(\hat{\theta})$ with the linearized estimator and possible bootstrap estimators using measures of accuracy as in Table 2.1 (page 32).

References

Shao, J. and Tu, D. (1995). *The Jackknife and the Bootstrap*. Springer, New York.