Impact of Bias Correction of the Least Squares Estimation on Bootstrap Confidence Intervals for Bifurcating Autoregressive Models

The Readme.pdf file contains the brief descriptions of the supplementary files and folders.

Data

The folder contains two files. “Tree_means.xlsx” contains the lifetimes (in tenths of hours) of the progeny of EMT6 (BALB/c mouse mammary tumor) cells were recorded and 877 observations were obtained from 41 trees. The data were collected at the Institute of Cancer Research, Lille, France, and can be found in Appendix B of Staudte et al. (1984). “Tree_means.csv” contains the averaged observations from cells in each position in all 41 trees after trimming the largest two trees at 63 cells. The average of all cells’ averages is used for imputing the initial cell for the averages tree.

Code_App

The folder contains the R code for reading the datasets of the binary trees and calculating the confidence intervals discussed in the paper including the width of each confidence interval. Also, the code includes the commands for creating the binary tree figures in the paper.

Code_Sim

The folder contains R codes for the simulation results. It contains five scenarios. All these scenarios are submitted to a SLURM cluster for intensive simulation as described in the paper. Each code is just one job. “norm_mean0_var1.R” is used for simulating data based on the first-order bifurcating autoregressive model with intercept = 10 and autoregressive coefficient = -0.85 and error correlation = -0.9. The simulated results are based on Least Squares estimation under standard normal errors N(0,1). “norm_mean0_var0.25.R” is similar to “norm_mean0_var1.R” but under normal errors N(0,0.25). “norm_mean0_var0.5.R” is similar to “norm_mean0_var1.R” but under normal errors N(0,0.5). “snorm_mean0_var1_skew3.R” is similar to “norm_mean0_var1.R” but under skewed normal errors with skewness = 3. “t_df10.R” is similar to “norm_mean0_var1.R” but under t distribution errors with 10 degrees of freedom. “summary_ci_results.R” is a code for reading, combining and writing the results from all jobs and saving them in one CSV file. Also, it contains the required commands for generating the manuscript figures stored in “img” folder.

img

The generated figures used in the latex document are given in the folder "img". In addition, the other simulation results figures that are discussed in the paper but not included in the latex document.