

Supplement D. Convergence Diagnosis and Parameter Estimation. When fitting the change-point-in-tree model to a data file, we simultaneously run 2 independent MCMC chains with different start values and stop when $|\hat{R} - 1| < 0.2$ holds for all parameters. Using a synthesized data file with 3 true change points from Synthesized Data Set 2 as an example, Figure D.1 shows the trace plots of the MCMC chains of its parameters β and μ . It shows that the convergence speed of our MCMC algorithm is fast on this synthesized data file. The corresponding 95% Bayesian credible intervals of parameters β and μ are shown in Table D.1. It shows that all the credible intervals successfully capture the corresponding truth parameter values.

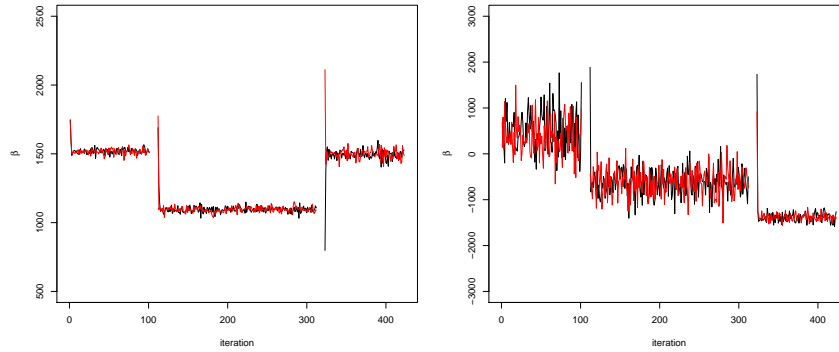


FIG D.1. MCMC trace plots on a synthesized data file. When fitting the change-point-in-tree model to the synthesized data file, three change points are detected by the MCMC algorithm within 101, 201 and 101 iterations respectively, and classified by the trained SVR as expression branches.

TABLE D.1

95% credible intervals for parameters μ and β . Each of the 3 detected expression branches has its own β .

	β_1	β_2	β_3	μ
truth	1517.01	1094.87	1503.87	-1356.55
2.5% quantile	1479.41	1064.96	1419.21	-1556.23
97.5% quantile	1556.12	1137.00	1563.79	-1197.64

As for real data file, we use the data file *CD20060506_dyf7pJIM20.csv* as an example, Figure D.2 shows the trace plots of the MCMC chains of parameters β and μ . It shows that the convergence speed of our MCMC algorithm is also fast on this real data file.

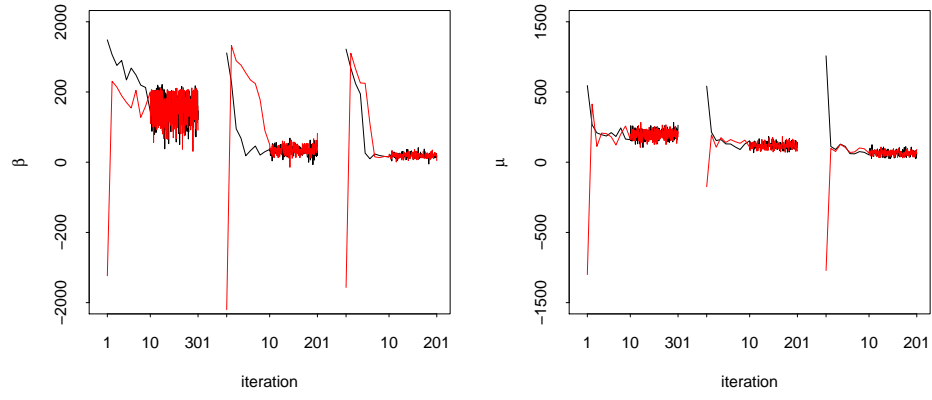


FIG D.2. *MCMC trace plots on a real data file. When fitting the change-point-in-tree model to the data file `CD20060506_dyf7pJIM20.csv`, three change points are detected by the MCMC algorithm within 301, 201 and 201 iterations respectively, and classified by the trained SVR as expression branches.*