

## How to use program SDTRating

When the program SDTRating starts, a window shown in Figure 1 appears. Click

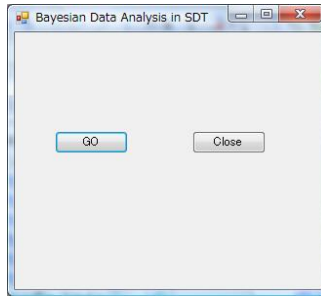


Figure 1. The window which appears when the program SDTRating starts.

on the GO-button, then a file dialog window will be presented (Figure 2). In this

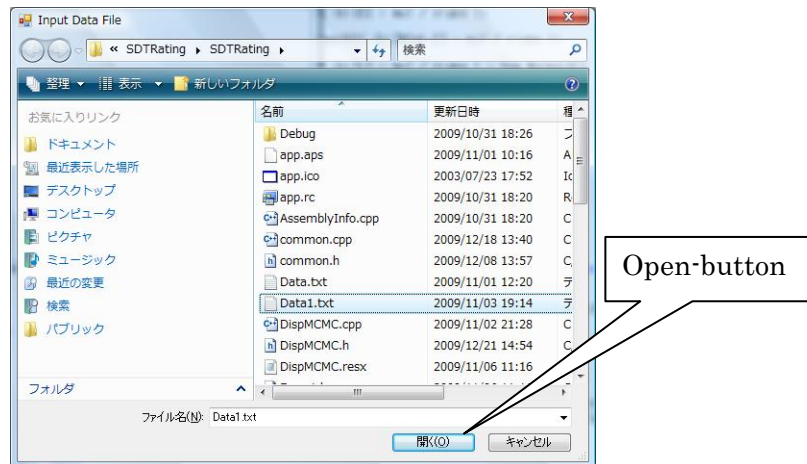


Figure 2. A file dialog window, which is presented after clicking on the GO-button in Figure 1.

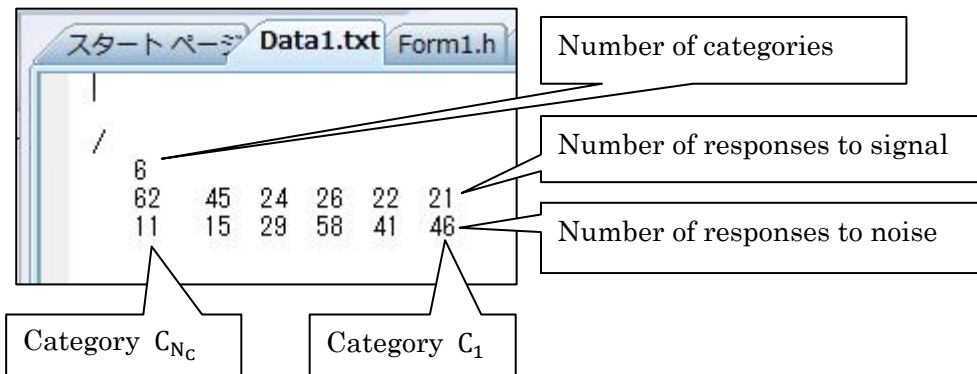


Figure 3. A data file.

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window, the name of a data file should be set. An example of a data file is shown in Figure 3. In the next line to that, which starts with a slash, the number of response categories should be written. In the succeeding line, the number of responses of each category to the signal is written from category  $C_{N_C}$  to  $C_1$  in this order. In the next line, the number of responses of each category to the noise is written in the same way as to the signal. After setting the name of a data file, click on the open-button, then a form window as shown in Figure 4 will appear and the stochastic simulation by MCMC will start.

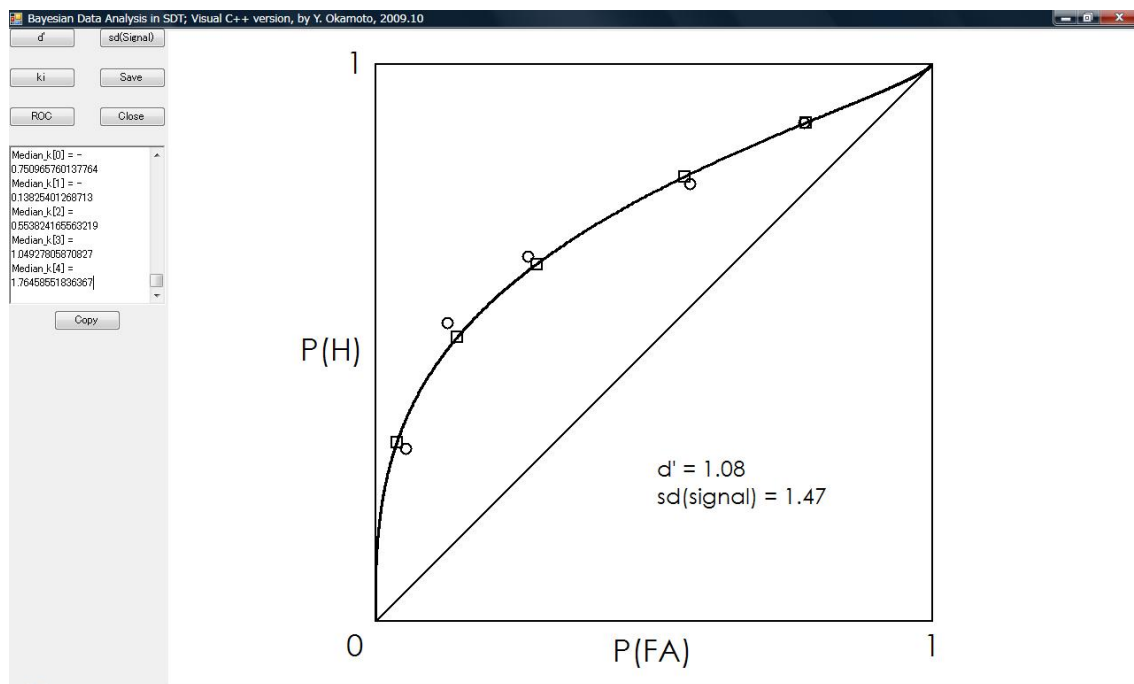


Figure 4. The form window, where results of MCMC analysis are displayed.

After the calculation, a graph of an ROC curve will be displayed, where small

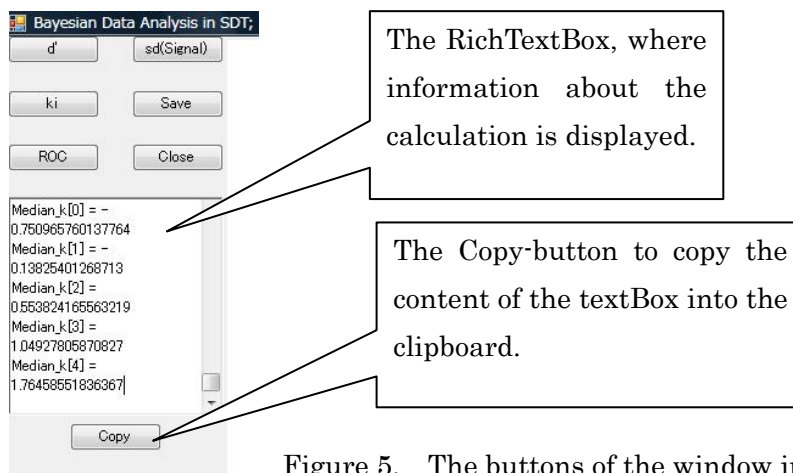


Figure 5. The buttons of the window in Figure 10.

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circles represent data ( $\sum_{i=1}^r N_{ni}, \sum_{i=1}^r N_{si}$ ) and small squares estimated points ( $\Phi(k_r), \Phi((k_r - \mu_s)/\sigma_s)$ ). A posterior distribution of a parameter is displayed when clicking on an appropriate button (Figure 5). In the program SDTRating, curves of the posterior distributions are estimated by a kernel method with a Gaussian kernel (Wand

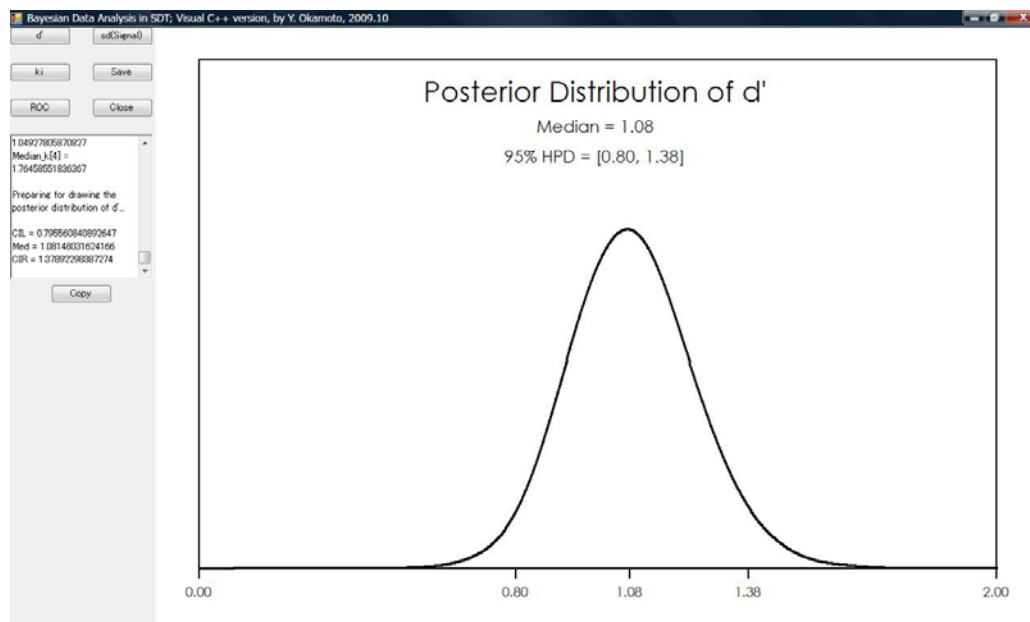


Figure 6. A posterior distribution of  $d'$ .

and Jones, 1995). 95% HPD intervals are estimated by the Chen-Shao HPD estimation algorithm (Chen et al., 2000). When the user clicks on the  $d'$ -button, the calculation starts and information about the calculation will be displayed in the RichTextBox. After the calculation, the posterior distribution of  $d' = \mu_s$  is displayed (Figure 6). When the user clicks on the  $sd(\text{Signal})$ -button, the posterior distribution of  $\sigma_s$  will be displayed (Figure 7). When the user clicks on the  $ki$ -button, the posterior distributions of the  $N_C - 1$  criteria  $k_i$  will be displayed (Figure 8).

Graphs in the window can be stored in a file by clicking on the Save-button. Messages in the RichTextBox can be copied into the clipboard by clicking on the

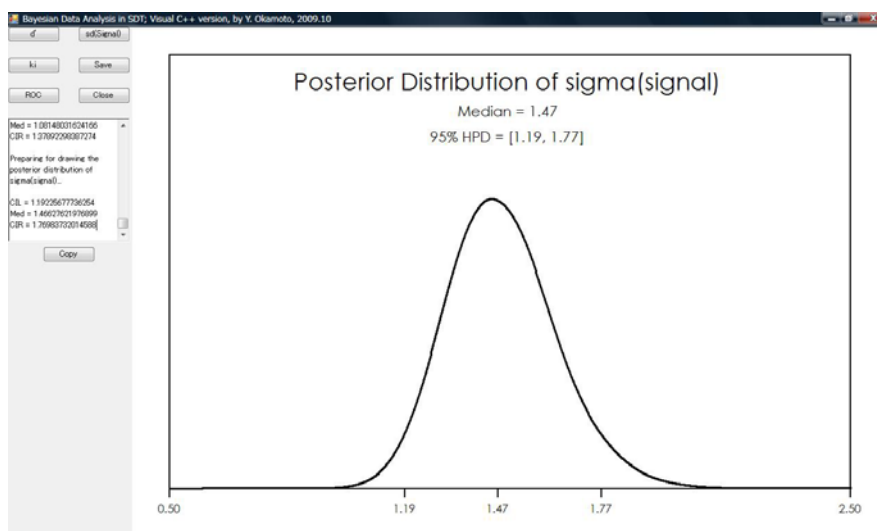


Figure 7. A posterior distribution of  $\sigma_s$ .

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Copy-button.

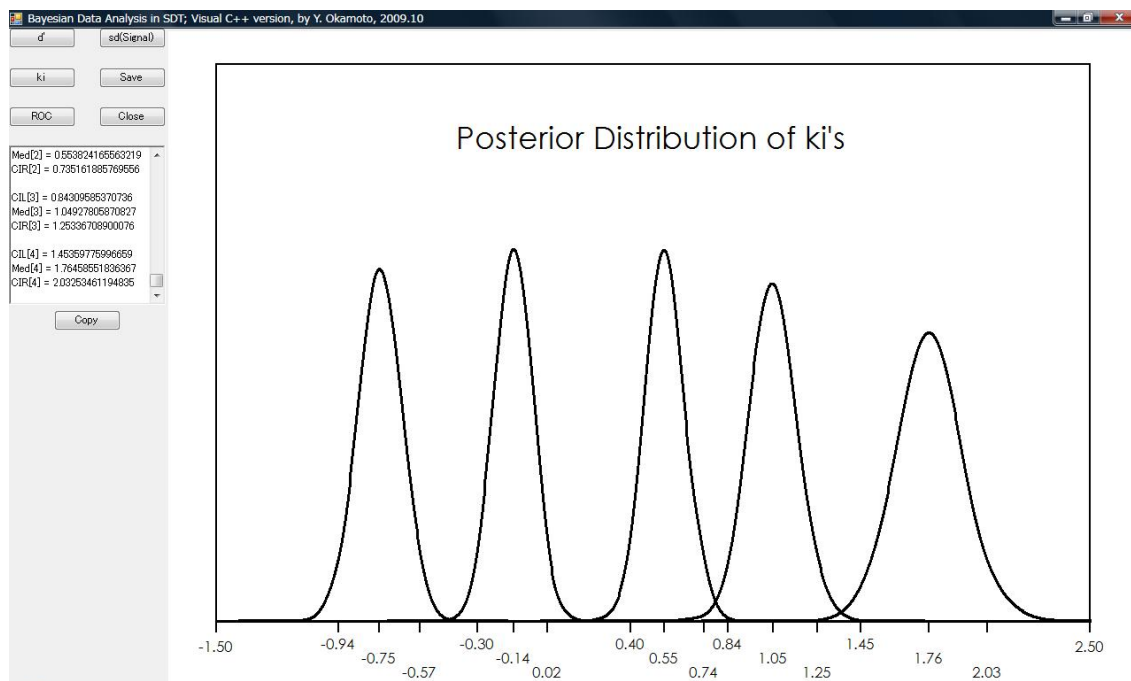


Figure 8. Posterior distributions of criterion parameters  $k_i$ 's.