1 Introduction

SAUFAC (Setup Adjustment Under Fixed Adjustment Costs) runs under R environment (tested in version 1.7). It contains 2 source files and 2 sample input files listed in the table below. These files are packaged in the compressed file *SAUFAC.zip*.

File	Description
chart.R	R source code that computes the control table for unknown-variance case
chart_n.R	R source code that computes the control table for known-variance case
input1.dat	sample input file for *chart.R*, used for the Example 1 in the paper
input2.dat	sample input file for *chart_n.R*, used for the Example 2 in the paper

Table 1: A complete list of the files

2 Installation

Save the source files, *chart.R* and *chart_n.R*, in any directory you want, for example "*C:\directory*" . Save or create two input files, *input1.dat* and *input2.dat*, in the working directory of R.

3 Usage

3.1 Input files

input1.dat should contain a row of numbers separated by spaces. These numbers are the input parameters used by chat.R. From left to right respectively, they are N, C, nu0, kappa0, range.mu, incre.mu, range.sigma, incre.sigma and Rep, as shown in the Table 2.

Parameter	Description
N	number of parts to produce
C	fixed adjustment cost
nu0	prior parameter, ν_0 in the paper
kappa0	prior parameter, κ_0 in the paper
range.mu	the upper limit of μ_i', i.e. $n_1 \times d_\mu$ in the paper
incre.mu	the increment of discrete μ_i', i.e. d_μ in the paper
range.sigma	the upper limit of σ_i', i.e. $n_2 \times d_\sigma$ in the paper
incre.sigma	the increment of discrete σ_i', i.e. d_σ in the paper
Rep	number of replications used in one monte carlo integration

Table 2: Input parameters in *input1.dat*

input2.dat should also contain a row of numbers separated by spaces. These numbers are the input parameters used by chat_ n.R. From left to right respectively, they are N, C, sigma, prec.0, range.mu, incre.mu and Rep, as shown in Table 3.

Parameter	Description
N	number of parts to produce
C	fixed adjustment cost
sigma	the revealed standard deviation of part-to-part error, σ_v in the paper.
prec.0	the initial precision, equals $\frac{1}{\tau_0^2}$ in the paper
range.mu	the upper limit of μ_i', i.e. $n \times d_\mu$ in the paper
incre.mu	the increment of discrete μ_i', i.e. d_μ in the paper
Rep	number of replications used in one monte carlo integration

Table 3: Input parameters in *input2.dat*

3.2 Run the program

After setting up the input files, you can run the program from R console. For example, if you want to find a control table for unknown-variance case, you can type the command **source("C:/directory/chart.R")** after the command prompt ">". While the program is running, a sequence of decreasing number will appear after the command. The last number represents which stage, from N to 1, the program is working on. So the progress can be observed.

After the program finishes running. An output file will be created in the working directory of R. It is named *table1.dat* in the unknown-variance case, or *table2.dat* in the known-variance case. Its format follows Table 1 or Table 5 in the paper.