

File list

lib.c: library implementation

lib.h: library header

csv.c: little helper library for CSV parsing (open source with minor modifications)

csv.h: CSV library header

soma.c: algorithm implementation, I only did necessary modifications

soma.h: SOMA library header

main.c: demo with the test against the 3 data sets (with both SOMAascii and SOMAexternal)

windows folder: compiled demo (also included .lib .dll and .h of muparser)

Obviously, in order to compile it, you need to have muparser installed in your system (or use the Windows .dll I included with the compiled demo). The code (mainly the demo and library header) is well commented, so it is straightforward to use and understand it.

Pending issues

- The definition of R^2 I used is $1 - SS_{res}/SS_{tot}$ (returned within the output struct), but cost function to minimize with SOMA is based on SS_{res} .
- R^2 threshold should be a function parameter or just a `#define` ?
- It seems it does not make sense to give an initial value for parameteres. Due to the stochastic nature of the algorithm, individuals must be initialized with random values, otherwise end result is equal to initial values.

Demo output

Mountain Curve SOMAascii

Elapsed time: 1.811742 s

R^2 : 0.997148

Parameter m1 = 6.191730e+00

Parameter m2 = 1.613856e+01

Parameter m3 = 4.508920e+02

Mountain Curve SOMAexternal

Elapsed time: 0.791852 s

R^2 : 0.997148

Parameter m1 = 6.191730e+00

Parameter m2 = 1.613856e+01

Parameter m3 = 4.508920e+02

Sawtooth SOMAascii

Elapsed time: 2.484741 s

R^2 : 0.940152

Parameter m1 = 9.302268e-01

Parameter m2 = -6.253395e-01

Parameter m3 = 3.074010e+01

Sawtooth SOMAexternal

Elapsed time: 0.182249 s

R^2 : 0.940152

Parameter m1 = 9.302268e-01

Parameter m2 = 6.253395e-01

Parameter m3 = 3.074010e+01

Waterfall SOMAascii

Elapsed time: 2.223186 s

R^2 : 0.972398

Parameter m1 = 2.460581e-01

Parameter m2 = 3.528348e-01

Parameter m3 = 1.004897e+01

Waterfall SOMAexternal

Elapsed time: 1.713739 s

R^2 : 0.972398

Parameter m1 = 2.460581e-01

Parameter m2 = 3.528348e-01

Parameter m3 = -1.004897e+01

