CONSTRAINED MAXIMUM LIKELIHOOD MT 1.0 for GAUSS NOW AVAILABLE!

GAUSS™

New Features

- Structures, in particular DS structures for handling data, and PV structures for handling parameters
- New method for testing hypotheses concerning models with constraints on parameters (Silvapule and Sen, _Constrained_Statistical_Inference_)
- New numerical derivatives, user-provided analytical derivatives“can compute a subset of the derivatives, the rest will be computed numerically
- New trust region method
- General improvement in algorithms

Requirements:

Requires GAUSS Mathematical and Statistical System (GAUSS) Version 6.0 or the GAUSS Engine 6.0.

Platforms:

Available for Windows, LINUX, UNIX (Sun SPARC, HPUX11, and AIX4) and Mac OS X.

Constrained Maximum Likelihood MT 1.0

The new Constrained Maximum Likelihood MT 1.0 uses structures for input, control, and output. Structures add flexibility and help organize information.

Constrained Maximum Likelihood MT (CML MT) is a new product from Aptech Systems that has powerful new features. For example, the same procedure computing the log-likelihood or objective function will be used to compute analytical derivatives as well if they are being provided. Its return argument is a “results” structure with three members, a scalar, or Nx1 vector containing the log-likelihood (or objective), a 1XK vector, or NxK matrix of first derivatives, and a KxK matrix or NxKxK array of second derivatives (it needs to be an array if the log-likelihood is weighted). Of course the derivatives are optional, or even partially optional; i.e., you can compute a subset of the derivatives if you like and the remaining will be computed numerically. This procedure will have an additional argument which tells the function which to compute, the log-likelihood or objective, the first derivatives, or the second derivatives, or all three. This means that calculations in common won't have to be redone.

The new CML MT will use the DS and PV structures that are now in use by Sqpsolvemt. The DS structure is completely flexible, allowing you to pass anything you can think of into your procedure. The PV structure revolutionizes how you pass the parameters into the procedure. No more do you have to struggle to get the parameter vector into matrices for calculating the function and its derivatives, trying to remember, or figure out, which parameter is where in the vector. If your log-likelihood uses matrices or arrays,you can store them directly into the PV structure and remove them as matrices or arrays with the parameters already plugged into them. The PV structure can handle matrices and arrays where some of their elements are fixed and some free. It remembers the fixed parameters and knows where to plug in the current values of the free parameters. It can handle symmetric matrices where parameters below the diagonal are repeated above the diagonal.

There will no longer be any need to use global variables. Anything the procedure needs can be passed into it through the DS structure. And these new applications will use control structures rather than global variables. This means, in addition to thread safety, that it will be straightforward to nest calls to CML MT inside of a call to CML MT (not to mention QNewtonmt, QProgmt, or EQsolvemt).

Aptech Systems, Inc.

distribué en France par Ritme

34 bd Haussmann, 75009 Paris ♦

Tel: 01 42 46 00 42 ♦ Fax: 01 42 46 00 33 ♦ Web: http://www.ritme.com