

This directory contains a set of **R** functions and matlab m files that do unconstrained optimization and nonlinear equations-solving. It also contains some auxiliary files. The **R** code was developed by translating the m files, but is currently in more active use.

csminwel:

minimization. Uses a quasi-Newton method with BFGS update of the estimated inverse hessian. It is robust against certain pathologies common on likelihood functions. It attempts to be robust against "cliffs", i.e. hyperplane discontinuities, though it is not really clear whether what it does in such cases succeeds reliably.

csmininit:

called by csminwel.

numgrad:

crude numerical derivative. Called by csminwel if no analytic gradient supplied. Beware of this or any other numerical derivative on large or ill-conditioned problems.



bfgsi:

The BFGS update for the inverse hessian.

csolve:

nonlinear equation solver. More robust than many. Tries random search directions if things look bad and will not get stuck at a flat spot in the sum of deviations objective function that is not a solution. This program was updated 3/10/99

As of this writing (August 19, 2005) there is a bug in csminwel.m that has been repaired in csminwel.R. When the routine encounters a "wall", it tries three search directions in the process of trying to "slide along" the wall. In order to stay clear of the wall discontinuity, it may choose as its next x value the value from a search direction that is not the lowest function value of the three. The bug is that the code should insist that, if available, a function value that improves f by more than the convergence criterion crit be chosen. Otherwise, the routine may halt the search, declaring "Improvement less than crit convergence", even though it is evident that it could have chosen a function value that improved by more than crit. The workaround, until csminwel.m is repaired, is to locate which of the three search directions delivered an improvement by more than crit, then restart, using the x and H values in whichever of the files g1, g2, or g3 has the best f value.

<u>Name</u>	<u>Last modified</u>	<u>Size</u>	<u>Description</u>
 mfiles/	02-Jun-2005 15:28	-	
 rfiles/	26-Jul-2005 21:29	-	

Apache/2.0.54 (Linux/SUSE) Server at sims.princeton.edu Port 80