

Re: best software environment for numerical analysis

Source: <http://sci.tech-archive.net/Archive/sci.math.num-analysis/2004-09/0237.html>

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On 16 Sep 2004 13:26:35 -0500, *beliavsky@aol.com* wrote:

>

>> *There is a free Fortran 95 compiler for Linux, called G95, at http://www.g95.org<*

GNU gcc-4.0 will include gfortran instead of g77. This is available, as a beta release, either from the gcc snapshots or as Linux/Cygwin binaries at <http://f77.linksysnet.com>.

G95 and gfortran forked nearly two years ago – don't ask me why because I wasn't there! It does seem like a waste of scarce effort, though.

>

> *Unless speed is very important, I think Python is fine, especially in conjunction*

> *with the Numeric or Numarray modules and SciPy. There are many math libraries*

> *callable from Python, and it is possible to call C and Fortran libraries.*

>

This choice is highly subjective and dependent on what you are trying to do.

(i) For high performance computing and large codes, fortran or C are the way to go. Both have extensive libraries, automatic vectorizers etc., etc..

(ii) For day to day, medium scale calculations/simulations, the various interpreted languages, mentioned in this thread, are ideal.

(iii) For syntactic simplicity in numerical calculations, with reasonable performance, matlab/octave/Scilab/FreeMat/... are ideal.

(iv) Python with SciPy, R and all the rest were designed for other

things and, in their present manifestations, can only be described (IMO) as being clumsy for numerical work – particularly if you are coming from a fortran world.

(v) Frankly, matlab is the best; both in terms of performance and libraries. However, you have to have a VERY, VERY deep pocket.

(vi) For compatibility and performance, octave is next best and is FREE. It does lack the fancy graphics and the GUI but, as has already been said on this thread, that can be dealt with by other means and will change in the future. Above all octave has good libraries and code written for Matlab runs on octave, pretty much as it comes. I use Matlab at work and octave at home. Code transfers between the two with no problem.

(vii) Scilab is also good, particularly in version 3, but has diverged substantially from matlab. As David Bateman said, the license has a commercial restriction: