NAG Fortran Library

The NAG Fortran Library is the world’s largest and most comprehensive numerical library. It contains over 1,700 routines that provide solutions to a vast range of mathematical and statistical problems. The NAG Fortran Library contains algorithms which are powerful, flexible and ready for use from a wide range of systems, languages, environments and packages including Excel, Java, MATLAB, .NET/C#, Python and many more.

NAG’s numerical capabilities have become synonymous with quality and flexibility. There are many reasons for this including; the calibre of the expert contributors from within NAG, academia and industry; the extensive documentation that accompanies all of its software; the stringent verification process to which every algorithm is subject.

Using the NAG Fortran Library strengthens user capability in numerical and statistical areas such as:

- Optimization – local and global optimization solvers
- Ordinary and partial differential equations
- Wavelet transforms
- Option pricing
- Partial least squares and ridge regression
- Nearest correlation matrix
- Quantiles
- Mesh generation
- Numerical integration
- Roots of nonlinear equations
- Dense, banded and sparse linear equations
- Eigenvalue problems
- Linear and nonlinear least squares problems
- Special functions
- Curve and surface fitting and interpolation
- Large scale eigenproblems
- Large, sparse systems of linear equations
- Random number generation
- Simple calculations of statistical data
- Correlation and regression analysis
- Multivariate methods
- Analysis of variance and contingency table analysis
- Time series analysis
- Nonparametric statistics
- Copulas – Normal and Student’s t
- Mixed effects regression

Key features

Mathematical and statistical functionality
NAG’s collection of world-class numerical functions are organised into chapters, each devoted to a mathematical or statistical area. This makes algorithmic selection extremely easy.

Detailed documentation
Each routine is accompanied by expert documentation with advice on the selection of the best algorithm and the interpretation of the results returned.

Every routine has an example program
Each NAG routine has an example program to demonstrate how to access it by solving a sample problem. This template can then be easily adapted to reflect your specific problem and help you manage and analyse your data.

Quality assured
The validity of each routine is tested on each of the machine ranges for which the Library is available. Only when an implementation satisfies our stringent accuracy requirements is it released. As a result you can rely on the proven correctness and reliability of the routines to give you the right answers.

Results Matter. Trust NAG.
Why should I use the NAG Fortran Library?

**Increased productivity**
NAG Fortran Library routines, written by experts in their field, are renowned for correctness, reliability and robustness making them the perfect choice to solve your problem.

**Safeguard and future-proof your application/work**
By using the NAG Library algorithms you cut key person dependency inherent if you choose to write your own code. The NAG Library is continually being updated and improved.

**Features**
- Unrivalled numerical functionality – over 1,700 routines
- Proven correctness and robustness
- Highly flexible and easy to use from multiple languages and environments
- Thread safe routines

**Benefits**
- Save time by not writing your own algorithmic code
- Future proof accuracy of application and reduce maintenance time
- NAG software evolves to reflect your programming language and environment advances
- Safely develop multithreaded applications

**Product availability**
The NAG Fortran Library is available for Linux, Microsoft Windows as a static library or as a DLL (Dynamic Link Library) and for Mac OS. It is also callable from other software packages, programming languages and development environments.

**Contact us**

<table>
<thead>
<tr>
<th>NAG Ltd – Oxford, UK</th>
<th>Nihon NAG – Tokyo, Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.nag.co.uk">www.nag.co.uk</a></td>
<td><a href="http://www.nag-j.co.jp">www.nag-j.co.jp</a></td>
</tr>
<tr>
<td>+44 1865 511245</td>
<td>+81 3 5542 6311</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NAG Inc – Chicago, USA</th>
<th>NAG Ltd – Taipei, Taiwan</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.nag.com">www.nag.com</a></td>
<td><a href="http://www.nag-gc.com">www.nag-gc.com</a></td>
</tr>
<tr>
<td>+1 630 971 2337</td>
<td>+886 2 25093288</td>
</tr>
</tbody>
</table>

NAG and the NAG logo are registered trademarks of The Numerical Algorithms Group. All other trademarks are hereby acknowledged. © The Numerical Algorithms Group (12.1)

Results Matter. Trust NAG.