

**PRODUCT BRIEF**

# Embeddable Algorithms for Data Mining and Analysis

Getting actionable results from your large and very large datasets can often determine if your organization meets its goals. IMSL Numerical Libraries provide mathematical and statistical algorithms that can be embedded into C, C++, Java, Fortran, and Python applications, including many databases. With IMSL, you can:

- Address complex problems quickly by using the right algorithm.
- Create competitive differentiation.
- Unlock innovation by using the most trusted, tested, and reliable algorithms available.
- Maintain consistency from prototype to production.

**THE IMSL NUMERICAL LIBRARIES ARE AVAILABLE FOR:**

C and C++	Java
Fortran	Python

**GET RESULTS THAT MATTER**

Developers can save weeks, months, or even years of effort by embedding the algorithms from IMSL Libraries versus building them in-house or using open source. Instead of writing hundreds of lines of code to create new algorithms, a developer can make one simple call to a routine that is fully tested, supported, and documented which allows faster time to market. Plus, IMSL Libraries offer superior error handling. Development time is quicker with input verification. Build bulletproof applications by capturing error messages that check algorithm progress, ill-conditioning and numerical instability, and offer suggestions on what to do next.

- Optimized and validated for compatibility, numerical accuracy, and performance on widely adopted platforms.

- Numerical algorithms are developed, tested, documented and supported by Perforce.
- Consistent commercial-quality interfaces yield faster time to market.
- Save up to 95 percent of the time required to research and develop algorithms.

**ACCELERATE DEVELOPMENT**

IMSL enhances application performance, reliability, portability, scalability, maintainability, and developer productivity. IMSL Libraries are supported across a wide range of languages, hardware, and operating system environments including Windows and Linux.



### IMSL FOR C/C++ (CNL)

CNL takes full advantage of the intrinsic characteristics and desirable features of the C language.



### IMSL FOR JAVA (JMSL)

JMSL provides robust data analysis and visualization technology for the Java platform and a fast, scalable framework for tailored analytical applications.

### Fortran

### IMSL FOR FORTRAN (FNL)

FNL combines the powerful and flexible interface features of the Fortran language with the performance benefits of both distributed memory and shared memory multiprocessing architectures.



### IMSL FOR PYTHON (PyNL)

PyNL leverages the power of the IMSL C Numerical Library to provide native numerical performance to the Python language.

## SUPPORTING THE ALGORITHMS YOU NEED

IMSL Libraries deliver a comprehensive set of algorithms in mathematics, statistics, data mining, and forecasting.

#### Mathematical

- Linear Algebra
- Eigensystem Analysis
- Interpolation and Approximation
- Quadrature
- Differential Equations
- Feynman-Kac Solver
- Transforms
- Nonlinear Equations
- Optimization
- Special Functions
- Utilities

#### Statistical

- Basic Statistics
- Time Series and Forecasting
- Nonparametric Tests
- Correlation and Covariance
- Regression
- Analysis of Variance
- Goodness of Fit
- Distribution Functions
- Random Number Generation
- Genetic Algorithm
- Naïve Bayes Classification

#### Data Mining

- Regression
- Cluster Analysis
- Neural Networks
- Auto\_ARIMA
- ARMA, GARCH
- Genetic Algorithm
- Naïve Bayes
- Logistic Regression
- Principal Components Analysis
- Factor Analysis
- Variances & Covariances
- Discriminant Analysis
- Analysis of Variance
- Support Vector Machines
- Decision Trees

## LEARN MORE ABOUT IMSL AT

[www.imsl.com](http://www.imsl.com)