



## JMSL Numerical Library for Java™ Applications

*"The numerical classes in the JMSL Numerical Library allow iSTRDYN (Dynatech analysis software package) to reliably solve heat transfer, forced response, and natural frequency calculations of large, complicated rotating systems. This frees us to concentrate on providing analysis features, rather than worrying about developing solution algorithms."*

LYN GREENHILL  
PRESIDENT  
DYNA TECH ENGINEERING

*"I use JMSL's classes as the building blocks to construct Java applets. I tried other products that provided both numerical functions and graphing capabilities. However, they did not provide adequate interactivity comparable to Java applets."*

GARY McCLELLAND  
PROFESSOR, DEPARTMENT OF PSYCHOLOGY  
UNIVERSITY OF COLORADO, BOULDER

### Advanced Numerical Analysis Combined with Charting

The JMSL Numerical Library for Java applications is the broadest collection of mathematical, statistical, financial, data mining and charting classes available in 100% Java. It is the only Java programming solution that combines integrated charting with the reliable mathematical and statistical functionality of the industry-leading IMSL® Numerical Library algorithms. This blend of advanced numerical analysis and visualization on the Java platform allows organizations to gain insight into valuable data and share analysis results across the enterprise quickly.

### Mathematical, Statistical and Charting Functionality

The JMSL Library provides robust data analysis and visualization technology for the Java platform and a fast, scalable framework for tailored analytical applications. By leveraging its pre-built algorithms, users can save weeks or months of development effort by embedding JMSL Library classes rather than building new algorithms from scratch.

The JMSL Library provides a broad range of functionality, from basic algorithms such as linear algebra and regression to advanced neural network forecasting and other data mining, modeling and prediction technologies. The neural network forecasting classes have tremendous potential for businesses by offering the ability to build predictive models using historical data and training the network to optimize the model over time as more information is obtained. This functionality can be applied to an unlimited set of applications, such as bioinformatics and life sciences, fraud detection, risk management and portfolio optimization, manufacturing yield analysis and more.

| Mathematical Functionality      | Statistical Functionality           | Charting Functionality              | Data Mining Functionality          |
|---------------------------------|-------------------------------------|-------------------------------------|------------------------------------|
| Linear Systems                  | Basic and Non-parametric Statistics | Function and Spline                 | Neural Network Engines             |
| Eigensystem Analysis            | Time Series and Forecasting         | Line, Pie, Scatter, Bar, and Box    | Neural Network Data Pre-processors |
| Interpolation and Approximation | Tests of Goodness of Fit            | Polar, Area, Contour, and Histogram | Naïve Bayes Classification         |
| Nonlinear Equations             | Regression                          | Support for XML                     | ...and much more                   |
| Optimization                    | Multivariate Analysis               | Date and Time Support               |                                    |
| Finance and Bond Calculations   | Probability Distribution Functions  | Fully Interactive Capabilities      |                                    |
| Differential Equations          | Random Number Generator             | High-Low-Close                      |                                    |
| ...and much more                | ...and much more                    | Heat Map and Tree Map               |                                    |
|                                 |                                     | ...and much more                    |                                    |

## WHAT'S NEW IN VERSION 6.0

### Powerful Charting Capabilities

- **New Tree Map class**

### New Functions

- **Data Mining**
  - Naïve Bayes for classification problems
- **Time Series Analysis**
  - AutoARIMA for automatic estimation of ARIMA parameters
  - Outlier Identification
  - Lack-of-Fit Test
- **Survival Analysis**
  - Life Tables
  - Kaplan-Meier estimates
  - Proportional Hazards
- **Other new statistical functions**
  - Expanded CDFs and PDFs
  - Random numbers from Copula distributions and Ziggurat method
- **Mathematical functions**
  - Feynman-Kac PDE
  - Adams-Gear ODE
  - TCB Cubic Splines
  - Numerical Derivatives for Jacobian computation

### Additional Updates and Enhancements



#### Corporate Headquarters

Rogue Wave Software  
5500 Flatiron Parkway, Suite 200  
Boulder, CO 80301, USA

#### USA Contact Information

Toll Free: 800.222.4675  
Boulder, CO: 303.545.3320  
Houston, TX: 713.784.3131  
Email: info@vni.com  
Web site: www.vni.com

#### Visual Numerics Worldwide Offices

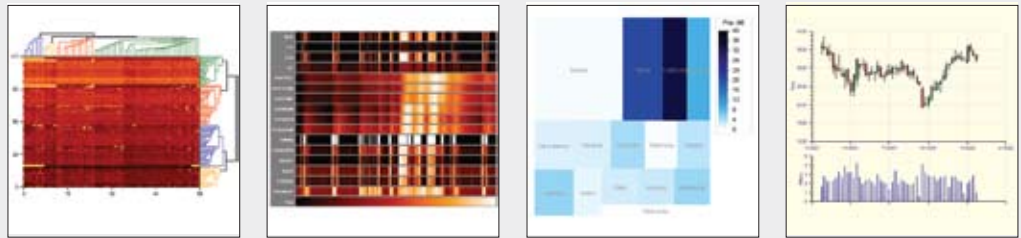
USA • UK • France • Germany • Japan

For contact information, please visit  
[www.vni.com/contact](http://www.vni.com/contact)

© 1970-2009 Visual Numerics, IMSL and PV-WAVE are registered trademarks of Visual Numerics, Inc. in the US and other countries. JMSL, JWAVE, TS-WAVE, PyIMSL and Knowledge in Motion are trademarks of Visual Numerics, Inc. All other company, product or brand names are the property of their respective owners.

## Powerful Charting Capabilities

The JMSL Numerical Library V6.0 offers a new Tree Map class adding to the extensive array of charting types. The chart types range from traditional scatter plots and bar graphs, to statistical process control charts and box plots, to unique types such as dendrogram for hierarchical cluster analysis visualization. Following a flexible object-oriented design, the customizable built-in types are easily embedded in desktop and web applications.



Sample charting types available in JMSL: Heat Map, Time Series, Tree Map, and Candlestick

## New Functions

JMSL version 6.0 has added 27 new classes to its libraries providing unique numerical analysis techniques to customers solving analytic problems in finance, business intelligence, data mining, and other areas of business, science and research.

With version 6.0:

- Finance customers will benefit from a new Feynman-Kac algorithm that solves Black-Scholes problems, two new least squares optimizers, Random Copula methods, Survival Analysis, Logistic and Pareto distributions
- Business intelligence and data mining software developers can leverage Naïve Bayes for classification and text mining problems. In addition, new classification capabilities in the Neural Network algorithm and new ways to select ARIMA models offer additional classification and forecasting techniques.

## Typical Application Areas

Today, major corporations, academic institutions, and research laboratories worldwide use the JMSL Library. Example application areas include:

- Risk management in financial services and insurance
- Portfolio optimization in financial services
- Business intelligence extensions for data warehouse software
- Statistical analysis of manufacturing test data
- Inventory management and demand forecasting
- Medical and biological system R&D and modeling

## Expert Consulting Services

Augment development productivity by utilizing Visual Numerics' expert consulting team to help find the best solution to any problem and deliver the support needed to ensure continued success. The highly-skilled technical experts in Visual Numerics' consulting organization collaborate with customers to identify specific application requirements at the initial phase of every project. Visual Numerics' consultants provide all levels of support from custom algorithm development to simply helping customers better understand their analysis and visualization needs. Customers can rely on Visual Numerics' technical expertise and dedicated hands-on help to achieve the highest return on investment.