

IMSL®

C# Numerical Library

Advanced Analytics for Microsoft® .NET Applications

"Visual Studio 2010, the .NET Framework 4, and the IMSL C# Numerical Library allow developers of analytical applications to harness the significant performance capabilities available through multi-core and manycore hardware. The IMSL .NET classes are easily referenced from Visual Studio 2010 projects and offer implicit parallelization for nearly linear performance increases when additional processors are available. The IMSL library is itself parallelized with the new support for parallel programming available in the .NET Framework 4. "

KEITH YEDLIN
PRODUCT UNIT MANAGER/
CONCURRENCY DEVELOPMENT PLATFORM
MICROSOFT CORPORATION

High Performance Business Analytics Made Easy

Written in 100% C#, the IMSL C# Numerical Library for Microsoft® .NET offers developers seamless accessibility to analytic capabilities alongside the programming productivity and ease of use they enjoy in Visual Studio.

As the only numerical library of its kind to offer unprecedented analytic capabilities and charting, the IMSL C# Library can be referenced from any .NET language including C#, F# and Visual Basic. It provides the most comprehensive, high-performing and accessible mathematical, statistical and financial algorithms for the .NET Framework 4 and Microsoft Silverlight 3.

With .NET Framework 4 and Visual Studio 2010, Microsoft has extended the threading capabilities of the .NET Framework with the Task Parallel Library (TPL). The IMSL C# Library has integrated these threading patterns into dozens of functions, resulting in easy access to parallel-processing performance increases that take advantage of multi-core hardware.

Mathematical, Statistical, Charting and Data Mining Functionality

The algorithms available within the IMSL C# Library cover all of the major categories of functionality commonly used in numerical analysis. Users can save months of development effort by embedding functions from the IMSL C# Library in their applications rather than by building new algorithms from scratch.

Mathematical	Statistical	Charting	Data Mining
<ul style="list-style-type: none"> • Linear Systems • Eigensystem Analysis • Interpolation and Approximation • Nonlinear Equations • Optimization • Finance and Bond Calculations • Differential Equations ... and much more 	<ul style="list-style-type: none"> • Basic and Non-parametric Statistics • Time Series and Forecasting • Tests of Goodness of Fit • Regression • Multivariate Analysis • Probability Distribution Functions • Random Number Generator ... and much more 	<ul style="list-style-type: none"> • Function and Spline • Line, Pie, Scatter, Bar, and Box • Polar, Area, Contour, and Histogram • Date and Time Support • Fully Interactive Capabilities • High-Low-Close • Heat Map and Tree Map ... and much more 	<ul style="list-style-type: none"> • Neural Network Engines • Neural Network Data Pre-processors • Naïve Bayes Classification ... and much more



WHAT'S NEW IN VERSION 6.5

Improved Performance

- Utilization of the Task Parallel Library (TPL) in .NET Framework 4
- Integration of the Intel[®] Math Kernel Library

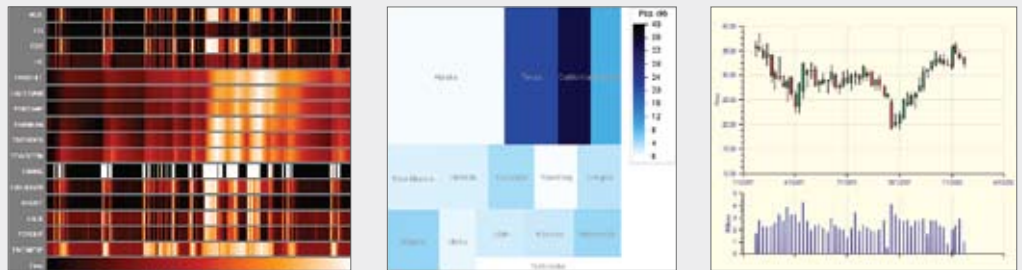
Powerful Tree Map Chart

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 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

Powerful Charting Capabilities

The IMSL C# Numerical Library offers an extensive array of charting options including traditional scatter plots and bar graphs, statistical process control charts and box plots, and several unique chart types such as dendrogram for hierarchical cluster analysis visualization. The customizable built-in chart types are easily embedded in desktop and web applications.



Sample charting types available in IMSL C#: Time Series, Tree Map, and Candlestick

Typical Application Areas

This functionality can be applied to an unlimited set of applications. Major corporations, academic institutions, and research laboratories worldwide currently use the IMSL C# Library. Example application areas include:

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

Expert Consulting Services

The highly-skilled technical experts in Visual Numerics' services organization know how to help you get the most from your investment in advanced analytics. They can provide assistance ranging from custom algorithm development to recommendations on how to better leverage analysis and visualization capabilities throughout your organization. Visual Numerics' technical expertise and dedicated hands-on assistance can be utilized to achieve the highest return on your investment.

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