

VisSim™ 7

Dynamic Modeling and Simulation Software

VisSim is a Windows-based program for modeling and simulating complex dynamic systems. VisSim combines an intuitive drag-and-drop block diagram interface with a powerful simulation engine. The visual interface offers a simple method for constructing, modifying, and maintaining complex system models. The simulation engine provides fast and accurate solutions for linear, nonlinear, continuous time, discrete time, time varying, SISO, MIMO, and hybrid system design.

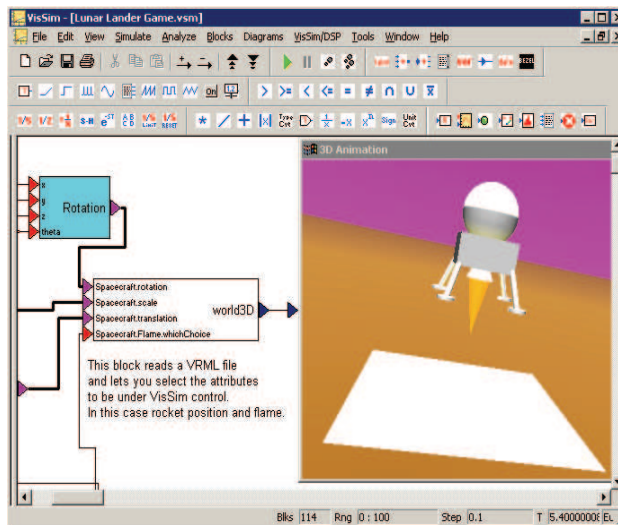
With VisSim, you can rapidly develop software prototypes of systems or processes to demonstrate their behavior prior to building the physical prototype. Furthermore, all modeling and simulation tasks can be completed without writing a line of code. This leads to significant savings in both development time and costs, and a greater assurance that the resultant product will perform as specified.

A personal version of VisSim is also available. Typically used in academic settings, VisSim PE limits block diagrams to 100 blocks and does not include the userFunction and embed blocks.

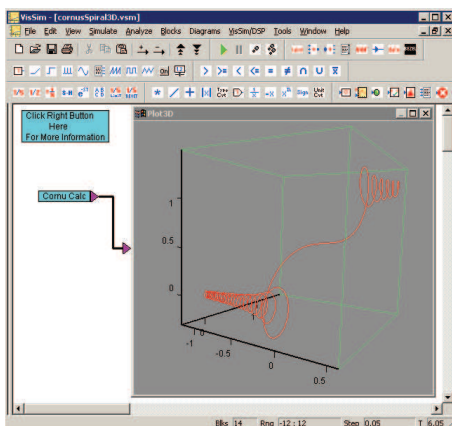
3D Animation

VisSim allows animation of individual mesh files or reading of a VRML 3D scene files. Object transformation, motion, lighting, and camera view are all under VisSim program control.

The animation3D block plots the 3D scene. This block accepts as input the camera3D, light3D, mesh3D, and world3D blocks, which create and control the animation. The camera3D, light3D, and mesh3D blocks are DirectX blocks.



3D animation of an object within a VRML scene. The VisSim world3D block reads a VRML file and lets you expose objects within for VisSim control.



VisSim diagram showing the 3D plot of a Cornu Spiral trajectory.

3D Plotting

3D trajectory data and matrix surface data can be plotted interactively with the new 3D plot block. The plot3D block provides an easy method to plot and visualize vector and matrix data as three dimensional objects. You can manipulate the 3D objects in the following ways:

- Display the objects as data points, curves, or solid surfaces.
- Use a light source to create realistic surfaces.
- Export the data and mesh dimensions of the objects to standard file formats.
- Rotate, zoom, and drag the 3D objects
- Control the axes, grid lines, and bounding box for the plot

Modeling Highlights

- Drag-and-drop block diagram construction
- 120+ linear and nonlinear blocks
- Toolbox functions for control, electromechanical design, hydraulics, signal processing, process, chemical, thermal, and turbines
- ActiveX support
- Dialog box generation for compound blocks
- Vector and matrix operations
- Automatic dialog table construction
- Visual diagram comparisons
- DLL wizard for custom blocks in C, C++, Fortran, or Pascal (not available in VisSim PE)
- FIR and IIR filter design
- Hierarchical models with protection
- VisSim Menu Browser
- Embedded subdiagrams with editing
- Enhanced search capability
- Automatic wiring and wire checking
- Goto tags
- Global and local variables
- Layering bezel blocks
- Font and digit control for numeric displays
- Data I/O in ASCII, .M, .MAT, .WAV formats
- DDE with Copy Link and Paste Link
- Customizable toolbar
- Allow use of comma as decimal point
- Support time format for data import files

Simulation Highlights

- Linear, nonlinear, continuous-time, discrete-time, time-varying, and hybrid simulation
- Interactive, batch, auto-restart, and single step execution modes
- Euler, trapezoidal, Runge Kutta 2nd and 4th orders, adaptive Runge Kutta 5th order, adaptive Bulirsh-Stoer, adaptive Adams-Moulton, adaptive BDF, and stiff backward Euler integration algorithms
- MatLab, Mathcad, and Maple integration
- Triggered compound blocks
- Local bounds for compound blocks
- Real-time scaling controls simulation rate
- 1-D, 2-D, and 3-D look-up table

Simulation Highlights

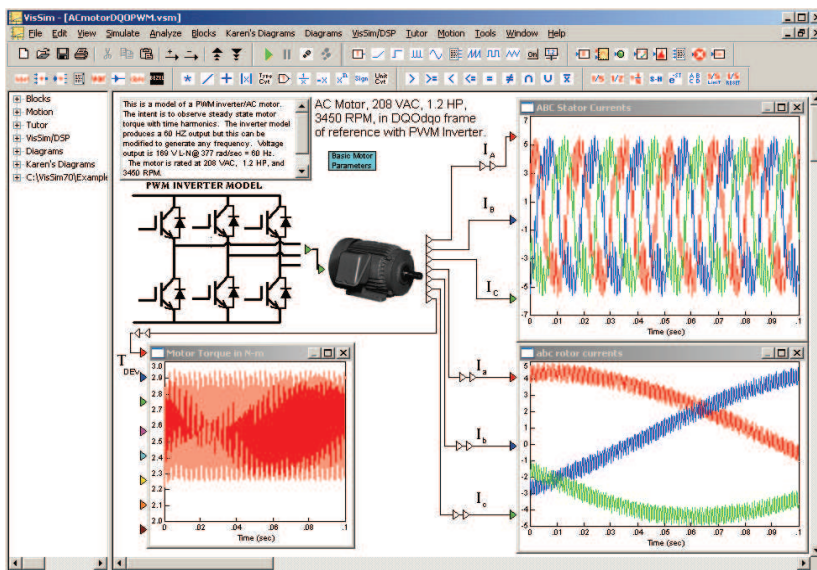
- "What-If" scenarios
- 28 matrix operators
- Complex number support
- 11 random distribution functions
- Reset states
- Parameter optimization
- Variables for initial conditions and block parameters
- State checkpointing
- Implicit system solvers
- Error highlighting
- Quiet background logging of system errors and events
- Conversion of s- and z-domain transfer functions

Visualization Highlights

- Spectrum display
- 3D interactive animation
- Interactive XY, time domain, FFT, and discrete plots and strip charts
 - Eight signal traces
 - Log, semi-log and linear scales
 - Automatic Y scaling and selectable time axis scaling
 - Multi-XY traces
 - Multi-plot windows
 - Snap to data points
 - Matrix input
 - ASCII, .M, .MAT, and .WAV
- 3D plotting
- PID faceplates
- Audio and visual alarms
- Dynamic graphs, meters, and histograms
- Publication-quality presentation mode

General Features

- Integrated VisSim Viewer
- VisSim Tutor
- Multiple diagram windows
- Read and write audio data
- Diagram reports
- Automatic reload of last diagram
- Multi-level undo and redo
- String processing
- Global, local, and nested path aliases



Nonlinear simulation of an AC motor under DQ PWM-based control

Technical Specifications

Types of Systems

- Linear and nonlinear
- Continuous- and discrete-time
- Time varying
- Multi-rate
- SISO and MIMO
- Hybrid

Operating Systems

Windows 2000, Me, XP, or Vista

System Requirements

- 128 MB RAM
- 125 MB hard disk space

Technical Specifications

Max. blocks	500K
Max. plots	500K
Max. integrators	500K
Max. data points	200K
Block nesting	500K
Integration methods	9
Numeric precision	IEEE 64-bit
Data file format	ASCII, .M, .MAT, .WAV
ABCD state-space format	.MAT, .M

Block Library

The standard block set includes over 120 linear and nonlinear blocks in the following categories:

Animation	Annotation
Arithmetic	Audio
Boolean	DDE
Fixed Point	Integration
Linear Systems	Maple Interface
MatLab Interface	Matrix Operations
Nonlinear	Optimization
Random Generator	Real Time
Signal Consumer	Signal Producer
State Transition	Time Delay
Transcendental	



Modeling The Future