Physics Library

Add Realistic Physics To Your Interactive 3D Experiences

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Based on Havok technology, the Physics Library is an add-on library for Virtools developers who want to inject lifelike physics into their applications. Consisting of 29 new building blocks, the Physics Libary provides access to features like gravity, mass, friction, elasticity, physical constraints between objects, and advanced physics models like buoyancy, force fields and car behaviors. These features speed up development, replacing tedious animation work and algorithm implementation by artists and programmers while remaining compatible with existing Virtools non-physics behaviors.

Key Features

- Realistic physics with 29 documented behavior building blocks
- Demo samples showing gravity, friction, collision detection, constraints, and more
- User guide for efficient implementation

Technical Requirements

Hardware

• Pentium III or equivalent
• 1Gigabyte (GB) of RAM
• DVD ROM drive
• Monitor capable of displaying 1024 by 768 in 16 bit color (65536 color/ Hi-color)
• Pointing device (mouse, trackball...)
• Direct3D or OpenGL compatible 3D graphic card with 128 MB of RAM
• DirectSound compatible sound card (not a requirement but recommended)
• You should ensure you have the latest official drivers for your graphics card

Software

• Microsoft Windows (2000, XP)
• Microsoft DirectX 9.0C for DirectX compatible 3D graphic accelerator cards
• For OpenGL, an OpenGL 2.0 compatible graphics card and driver
• Microsoft Internet Explorer 6.0 (for the Online Reference)

Realistic Physics For Interactive 3D Worlds

The Physics Library lets you create interactive 3D worlds with realistic physics. Use the power of Havok's technology to apply the laws of physics to your 3D objects. These objects can be convex, concave or ball primitives, and each can have their own mass, friction and elasticity. The topology used for such objects can be different from the version actually rendered onscreen, letting developers make adjustments with a more economical physics model thus reducing processing time for calculating physics behaviors. All physics simulation parameters can be modified at run-time, including gravity, physical time for the overall scene, objects to be added or removed from the physics world, and more…

These features enable dynamic streaming of content that adapts to user interaction. Connections with the Multiuser Server bring hassle-free personalization to the web. That means you can make your business logic first.

Rigid Body Collision Detection And Constraints

The Physics Library not only offers lifelike physics interactions, but also provides superior collision management, surpassing (for ease of use) the standard Virtools collision detection behaviors. Information from the physics simulation is made available as behavior outputs, which can be used by developers to trigger other scripts in the application.

With physics constraints like springs, hinges, point-to-plane and ball joints, developers can create articulated bodies that come to life with animations guided by the physics simulation. This process optimizes production time and budget, since 3D artists no longer have to prepare complex animations in advance to account for all potential movements and interactions.

Ultimately, with the Physics Library, developers have the means to make solid decisions on the best solutions for problems, such as physics versus key-frame animation, encountered throughout production. They can even mix solutions, for example using pre-animated objects with special effects driven by the Physics Library behaviors. The result is simple: reduced development time and budget.

Ready-To-Use Behaviors For Non-Programmers

All physics simulation features are used in the intuitive Virtools platform, as a bundled set of behavior building blocks.
In addition to basic features like definition and modification of objects' physics properties, and creating or destroying constraints, the Physics Library gives developers access to high-level behaviors to manage complex physics simulation models.

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