

Computer Models For Fire and Smoke

<i>Model Name:</i>	Berkeley Firewalk
<i>Version:</i>	UCB 12.0.1 (currently being distributed)
<i>Classification:</i>	Zone model (uses FAST/CFAST)
<i>Very Short Description:</i>	An integrated, experimental 3D front-end to CFAST which includes a number of 3D modeling and display tools.
<i>Modeler(s), Organization(s):</i>	Richard W. Bukowski III, University of California, Berkeley
<i>User's Guide:</i>	None at present (some on-line help and downloadable instructions)
<i>Technical References:</i>	<p>Interactive Simulation of Fire in Virtual Building Environments, by Richard Bukowski and Carlo Sequin, Proceedings of SIGGRAPH 97 (Los Angeles, CA, August 1997)</p> <p>The FireWalk System: Fire Modeling in Interactive Virtual Environments, by Richard Bukowski and Carlo Sequin, Proceedings of the 2nd International Conference on Fire Research and Engineering (Gaithersburg, MD, August 1997)</p> <p>Also, see CFAST/FAST</p>
<i>Validation References:</i>	See CFAST/FAST
<i>Availability:</i>	Web (http://www.cs.berkeley.edu/~bukowski/wkfire)
<i>Price:</i>	Free (Research software)
<i>Necessary Hardware:</i>	Win32 platforms (including Windows 95 [with patches or OSR2], Windows 98/NT, not tested on Win2000 or WinME), Silicon Graphics running Irix 6.5. Windows

machines should have a 3D accelerator of some kind for decent performance.

Computer Language: C, C++, Fortran, and Tcl/Tk

Size: 50-100 MB of disk and 64 MB of RAM recommended

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Detailed Description:

Firewalk is an offshoot of the Berkeley Walkthru program, whose original intent was to interactively model architectural environments from floorplans. Research into integrated simulations in 3D virtual environments combined the CFAST zone model with this basic visualization system to form Firewalk. The system allows a CFAST server, which can run on the user's machine or a separate machine to distribute computing load, to connect to a Walkthru client program and 3D visualizer. From the client, the user can walk through the building interactively and initiate, control, and view the impact of CFAST runs in the building being visualized. A VCR-style panel controls the playback of the events being simulated, and a number of viewing modes simulate what the environment would look like and what physical conditions are in the various rooms. Quantitative displays are available to graph or list numerical quantities. The system can automatically export building geometry to CFAST from the Walkthru model, allowing the user to model with the Walkthru tools, providing for easier and more visual entry of new buildings. The system is designed to provide rapid prototyping, easily understandable visualizations, and greater ease of comparative modeling for the user. The system is part of an ongoing research program into richly interactive virtual environment systems.