

SIMPLIFYING 3D GAME ENGINE DEVELOPMENT WITH OPEN SOURCE SOFTWARE

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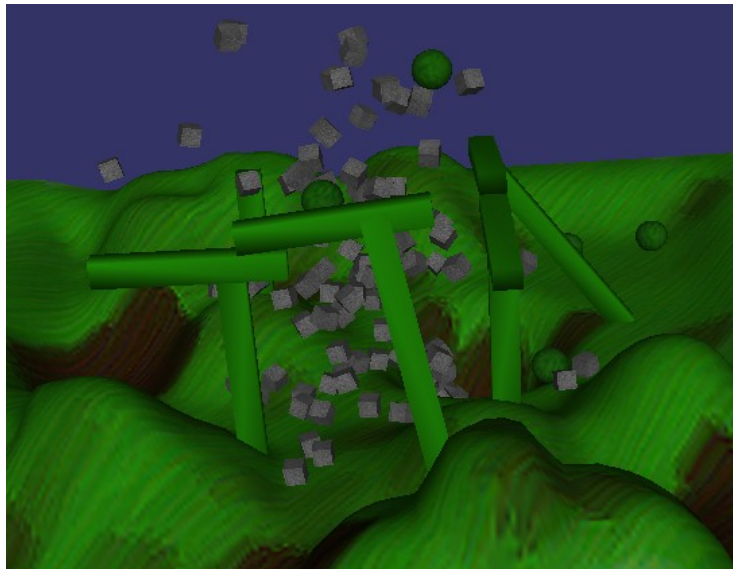
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Off-Campus Experience and Constructive Research

Designing software libraries in the past was about using in-house resources or buying 3rd party resource and incorporating them in new software the corporation needed. Today, there is a large movement for creating or using Open Source software. This constructive research project was to see whether a 3D game engine could be designed using open source software exclusively. The final product will hopefully be used to teach other students in designing software, particularly 3D games, from the ground up as easily as possible.

This project was researched and created in Japan, using only an Internet connection and a computer to illustrate the power of free information exchange. The project ended up being 5,000 lines of fresh code. With this small amount of code, it is able to do 3D rendering, physics simulation, contains a virtual machine for scripting, and sound. The cost of the project was \$0 and a trimester term of man hours.



Small image which demonstrates physics using ODE

All libraries used were open source and cross platform; OpenSceneGraph for graphics, OpenDynamicsEngine for physics, Lua and luabind for scripting, Boost, and OpenAL for sound. Each library was cross compiled for Mac OS X and Windows.

The conclusion of this research is that competent software can be created for free using the work of the open source community. The design of the library itself fosters ease of use (It is intended as a teaching aid) and customization. For instance, OpenSceneGraph does not have to be used and a library such as Allegro or DirectX could be used instead for displaying graphics. The important lesson to be learned is that the nature of the open source community brings about both portable and modular design of software.