

THE VICTORY GAME ENGINE

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ABSTRACT

We present the “Victory” game engine, a modern multi-platform capable engine that was developed as a group project at the National Centre for Computer Animation. Essentially the aim of this project was an exploration of the concepts surrounding computer game design. The final game engine features include:

- A non-linear animation system for in-game objects and characters.
- A modular and fully node-based architecture.
- Scripting support using the Lua extension language, allowing complete control of all aspects of the game engine.
- A renderer using the OpenGL API and NVIDIA’s Cg shading language (<http://developer.nvidia.com>) for hardware-accelerated programmable shaders.

In addition to the game engine itself, a number of tools to aid content creation for games using the engine were created. These tools include:

- An animation exporter for the Maya 3D modelling and animation system (<http://www.alias.com>) to export animations in a custom format for use by the non-linear animation system.
- A Maya plug-in to check if the geometry of models is valid for the game engine before they are exported and to correct the geometry if necessary.
- A “Collision Tree” Maya plug-in for setting up and exporting collision trees for in-game objects by assigning collision primitives to parts of the objects.

Finally, we also present a sample game application that was implemented using the engine to demonstrate its capabilities.