

Caltech
Department of
Computer
Science

CS 101.3
Hacking the GPU Class Lecture & Lab



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PM Direct3D (r)
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Fully programmable graphics cards with full floating point support enable a whole new level of realism in real time graphics and use of the graphics processing unit for physical simulation and many other "non-graphics" tasks.

DirectX is a standardized interface that provides access to these new features through a high level interface that allows the same code to run on implementations from multiple GPU vendors. It supports GPU programming using both assembly-level and high-level programming models. In the lecture we will cover some of the background of DirectX such as the overall architecture, key concepts, and the High Level Shading Language (HLSL) interface to programming vertex and pixel programs. Data access methods for multipass algorithms as commonly used in general GPU programming will be covered. Sample simulation applications include the wave equation and computation of potential surfaces.

The lecture will be augmented with a hands-on lab in the afternoon providing an introduction high level development tools to access the programmable graphics hardware. In this lab students will be able to develop, debug and step through GPU code for sample applications using the VC7 IDE.

Wednesday,
October 23rd
Lecture 12:30- 2pm
Lauritsen 123

Hands on Lab
with lead developers
of Direct3D
4-6pm, Jorgensen
Intel Lab 154



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