

Caltech
Department of
Computer
Science

CS 101.3
Hacking the GPU
Class Lecture

Monday,
October 28th,
12:30pm-2pm
Lauritsen 123



Hacking Next-Generation Programmable Graphics Hardware Law?

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This lecture will describe the the latest generation of programmable commodity graphics processing units (GPUs) and the applications they enable. This includes use of programmable graphics hardware to perform both rendering and non-rendering computations. On the rendering side, we will illustrate a variety of techniques such as GPU-side animation, high-dynamic range rendering and non-photorealistic rendering. On the non-rendering side, we will demonstrate use of a programmable GPU to run a 3D fire simulation on a lattice for subsequent rendering on a burning object using fur-like rendering techniques.

We will also demonstrate the ability to perform sophisticated image processing such as real-time transformation to and from the frequency domain with a Fourier transform executed on the GPU. Finally, the importance of high-level shading languages will also be underscored with several examples and an analysis of Microsoft's industry standard DirectX 9 High Level Shading Language compiler.

