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Real-Time 3D Rendering With DirectX And HLSL (Book) And DirectX Essentials LiveLessons (Video Training) Bundle



Synopsis

Get Started Quickly with DirectX 3D Programming: No 3D Experience Needed This step-by-step text demystifies modern graphics programming so you can quickly start writing professional code with DirectX and HLSL. Expert graphics instructor Paul Varcholik starts with the basics: a tour of the Direct3D graphics pipeline, a 3D math primer, and an introduction to the best tools and support libraries. Next, you'll discover shader authoring with HLSL. You'll implement basic lighting models, including ambient lighting, diffuse lighting, and specular highlighting. You'll write shaders to support point lights, spotlights, environment mapping, fog, color blending, normal mapping, and more. Then you'll employ C++ and the Direct3D API to develop a robust, extensible rendering engine. You'll learn about virtual cameras, loading and rendering 3D models, mouse and keyboard input, and you'll create a flexible effect and material system to integrate your shaders. Finally, you'll extend your graphics knowledge with more advanced material, including post-processing techniques for color filtering, Gaussian blurring, bloom, and distortion mapping. You'll develop shaders for casting shadows, work with geometry and tessellation shaders, and implement a complete skeletal animation system for importing and rendering animated models. You don't need any experience with 3D graphics or the associated math: Everything's taught hands-on, and all graphics-specific code is fully explained. Coverage includes

- The Direct3D API and graphics pipeline
- A 3D math primer: vectors, matrices, coordinate systems, transformations, and the DirectX Math library
- Free and low-cost tools for authoring, debugging, and profiling shaders
- Extensive treatment of HLSL shader authoring
- Development of a C++ rendering engine
- Cameras, 3D models, materials, and lighting
- Post-processing effects
- Device input, component-based architecture, and software services
- Shadow mapping, depth maps, and projective texture mapping
- Skeletal animation
- Geometry and tessellation shaders
- Survey of rendering optimization, global illumination, compute shaders, deferred shading, and data-driven engine architecture

5+ Hours of Video Instruction Real-time graphics programming is often considered a dark art, full of complex mathematics and esoteric tools. Even experienced programmers can find the material difficult to absorb. Furthermore, the rapid pace of advancement makes modern graphics programming a moving target, and establishing a foothold can be difficult. Quality educational material is a necessity for newcomers to the field. DirectX Essentials LiveLessons introduces viewers to graphics programming through a moderately deep-dive into shader programming and the Direct3D API. Dr. Paul Varcholik guides viewers with a practical, hands-on approach to modern DirectX application development. While these videos are geared towards programmers, no prior knowledge of graphics programming or 3D math is required.

The lessons begin with "Hello, World!" style rendering (drawing a single point and triangle) and extend into introductory lighting models including ambient and diffuse lighting, specular highlights, point lights, and spotlights. The videos also cover texture mapping, environment mapping, normal mapping, and color blending and introduce viewers to 3D math in a straight-forward, stress-free fashion.

Skill Level -- All Levels

What You Will Learn DirectX 11 API essentials How to write shaders using High Level Shading Language (HLSL) The 3D mathematics behind 3D graphics How to load and render 3D models Mapping textures to 3D objects Ambient and diffuse lighting, specular highlights, point lights, and spotlights Environment mapping, fog, normal mapping, and color blending Survey additional topics in modern rendering, including post processing, shadow mapping, skeletal animation, geometry and tessellation shaders, deferred rendering, global illumination, and compute shaders

Who Should Take This Course Developers looking for a practical introduction to 3D rendering and modern Direct3D

Course Requirements Familiarity with the C++ programming language

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