Direct3D Rendering Cookbook

Justin Stenning

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50 practical recipes to guide you through the advanced rendering techniques in Direct3D to help bring your 3D graphics project to life

About This Book

- Learn and implement the advanced rendering techniques in Direct3D 11.2 and bring your 3D graphics project to life
- Study the source code and digital assets with a small rendering framework and explore the features of Direct3D 11.2
- A practical, example-driven, technical cookbook with numerous illustrations and example images to help demonstrate the techniques described

Who This Book Is For

Direct3D Rendering Cookbook is for C# .NET developers who want to learn the advanced rendering techniques made possible with DirectX 11.2. It is expected that the reader has at least a cursory knowledge of graphics programming, and although some knowledge of Direct3D 10+ is helpful, it is not necessary. An understanding of vector and matrix algebra is required.

What You Will Learn

- Set up a Direct3D application and perform real-time 3D rendering with C# and SharpDX
- Learn techniques for debugging your Direct3D application
- Render a 3D environment with lights, shapes, and materials
- Explore character animation using bones and vertex skinning
- Create additional surface detail using tessellation with displacement mapping and displacement decals
- Implement image post-processing tasks within compute shaders
- Use real-time deferred rendering techniques to implement improved shading for lighting and shadows
- Learn to Program the graphics pipeline with shaders using HLSL implemented by Shader Model 5

In Detail

The latest 3D graphics cards bring us amazing visuals in the latest games, from Indie to AAA titles. This is made possible on Microsoft® platforms including PC, Xbox consoles, and mobile devices thanks to Direct3D– a component of the DirectX API dedicated to exposing 3D graphics hardware to programmers. Microsoft DirectX is the graphics technology powering all of today's hottest games. The latest version— DirectX 11—features tessellation for film-like geometric detail, compute shaders for custom graphics effects, and improved multithreading for better hardware utilization. With it comes a number of fundamental game changing improvements to the way in which we render 3D graphics.

Direct3D Rendering Cookbook provides detailed .NET examples covering a wide range of advanced 3D

rendering techniques available in Direct3D 11.2. With this book, you will learn how to use the new Visual Studio 2012 graphics content pipeline, how to perform character animation, how to use advanced hardware tessellation techniques, how to implement displacement mapping, perform image post-processing, and how to use compute shaders for general-purpose computing on GPUs.

After covering a few introductory topics about Direct3D 11.2 and working with the API using C# and SharpDX, we quickly ramp up to the implementation of a range of advanced rendering techniques, building upon the projects we create and the skills we learn in each subsequent chapter. Topics covered include using the new Visual Studio 2012 graphics content pipeline and graphics debugger, texture sampling, normal mapping, lighting and materials, loading meshes, character animation (vertex skinning), hardware tessellation, displacement mapping, using compute shaders for post-process effects, deferred rendering, and finally bringing all of this to Windows Store Apps for PC and mobile. After completing the recipes within Direct3D Rendering Cookbook, you will have an in-depth understanding of a range of advanced Direct3D rendering topics.

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