

## <<3D游戏引擎设计>>

### 图书基本信息

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作者：David H. Eberly

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### 前言

The first edition of 3D Game Engine Design appeared in print over six years ago ( September 2000 ) . At that time , shader programming did not exist on consumer graphics hardware. All rendering was performed using the fixed-function pipeline , which consisted.

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### 内容概要

本书深入剖析了3D游戏引擎的设计，书中许多内容对于更好地理解3D计算机图形学也极有帮助。本书首先介绍了几何转换和坐标系统等较基础的内容，然后介绍曲线、渲染、效果等高级知识。本书基于作者自身在游戏产业中的工作、研究经验，提供了算法、编程技术、代码等大量实用信息，对于游戏设计者及相应的编程人员来说，是一本非常有价值的参考书。

本书适合高等院校相关专业的师生、接受游戏软件开发培训的学生、相关技术人员及游戏开发人员阅读。

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### 作者简介

David H. Eberly, 著名游戏开发大师。

实时三维游戏引擎NetImmerse和Gamebryo (支持了文明、辐射和战锤等著名游戏) 的核心开发者之一。

目前是Geometric Tools公司总裁, 主持设计了实时三维游戏引擎Wild Magic。

他拥有数学和计算机科学两个博士学位。

除本书外, 他还著有Gam

<<3D游戏引擎设计>>

书籍目录

CHAPTER 1 INTRODUCTION  
CHAPTER 2 THE GRAPHICS SYSTEM  
CHAPTER 3 RENDERERS  
CHAPTER 4 SCENE GRAPHS  
CHAPTER 5 CONTROLLER-BASED ANIMATION  
CHAPTER 6 SPATIAL SORTING  
CHAPTER 7 LEVEL OF DETAIL  
CHAPTER 8 COLLISION DETECTION  
CHAPTER 9 PHYSICS  
CHAPTER 10 STANDARD OBJECTS  
CHAPTER 11 CURVES  
CHAPTER 12 SURFACES  
CHAPTER 13 CONTAINMENT METHODS  
CHAPTER 14 DISTANCE METHODS  
CHAPTER 15 INTERSECTION METHODS  
CHAPTER 16 NUMERICAL METHODS  
CHAPTER 17 ROTATIONS  
CHAPTER 18 OBJECT-ORIENTED INFRASTRUCTURE  
CHAPTER 19 MEMORY MANAGEMENT  
CHAPTER 20 SPECIAL EFFECTS USING SHADERS  
APPENDIX CREATING A SHADER IN WILD MAGIC

## 章节摘录

This chapter provides some basic concepts that occur in a computer graphics system. Some of these concepts are mathematical in nature. I am assuming that you are familiar with trigonometry , vector and matrix algebra , and dot products and cross products. A warning to those who have a significant mathematical background : I intentionally discuss the mathematical concepts in a somewhat informal manner. My goal is to present the relevant ideas without getting tied down in the minutiae of stating rigorous definitions for the concepts. The first edition of this book was criticized for overemphasizing the mathematical details&mdash;&mdash;and rightly so. Learn computer graphics first , and then later explore the beauty of formal mathematical exposition !

The foundations of coordinate systems ( Section 2.1 ) and transformations ( Section 2.2 ) are pervasive throughout a game engine. They are found not only in the graphics engines but in the physics engines and sound engines. Getting a model out of a modeling package and into the game world , setting up a camera for viewing , and displaying the model vertices and triangles is a process for which you must absolutely understand the coordinate systems and transformations. Scene graph management ( Chapter 4 ) also requires a thorough understanding of these topics. Sections 2.3 through 2.6 are the foundation for drawing 3D objects on a 2D screen. In a programming environment using graphics APIs such as OpenGL or Direct3D to access the graphics hardware , your participation in the process is typically restricted to selecting the parameters of the camera , providing the triangle primitives whose vertices have been assigned various attributes , and identifying objects that are not within the viewing region so that you do not have to draw them. The low-level processing of vertices and triangles is the responsibility of the graphics drivers. A discussion of the low-level processing is provided in this book , and a software renderer is part of the source code so you can see an actual implementation of the ideas.

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### 媒体关注与评论

“这是一部杰作，出自一位著名引擎开发人员之手。

书中公开了大量的实战技术内幕。

强烈推荐！

” ————Tim Sweeney，游戏开发大师，Unreal引擎之父，Epic公司创始人

“我相信，这部力作将成为游戏开发领域的圣经，它会大大提升游戏开发人员的整体水平。

” ————Andrea Pessino，《魔兽世界3》核心开发人员

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### 编辑推荐

《3D游戏引擎设计实时计算机图形学的应用方法（英文版）（第2版）》适合高等院校相关专业的师生、接受游戏软件开发培训的学生、相关技术人员及游戏开发人员阅读。

《3D游戏引擎设计实时计算机图形学的应用方法（英文版）（第2版）》是3D游戏引擎设计的经典著作，是作者多年游戏开发工作经验的结晶。

书中以一个真实的引擎Wild Magic为例，对3D游戏引擎的开发进行了全面而且深入的阐释，不仅讲述了必要的数学、物理和图形学理论知识和基本算法，还第一次揭示了设计和构建一个真实的实时图形引擎所需的各种复杂技术和过程。

内容涵盖图形系统、软件和硬件渲染、场景图形、基于控制器的动画、空间排序、碰撞检测、数值方法、内存管理等。

书中附有大量代码示例，完整实现了核心算法。



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