One would think that the title of Tomas Mollers and Eric Haines book, Real-Time Rendering, would be a contradiction in terms. How can such a computationally intensive process as rendering computer graphics ever hope to be done on the fly, in the blink of an eye, without delay—in short, in real time? The term rendering, as it applies to computer graphics, refers to the mathematically intensive process of creating a picture or sequence of frames based on geometry. The duration of this process is dependent on the complexity of the scene (a forest with many trees and thousands of leaves will take much longer to render than a scene consisting of a white box over a gray background) and the speed of the hardware doing the calculations. When Pixars Toy Story was first released, the computer animation community was all abuzz with how it was done, and someone at Pixar mentioned that over 100 SGI workstations were used for rendering the frames over the course of almost two years. Someone else extrapolated this data and figured out that the same movie could have...
been rendered on one contemporary PC over the course of about 80 years. The authors deftly answer the question, not only asserting that it can be done, but since this book is a programmers guide, they list snippets of programming algorithms that help outline how it can be done. Because the software and hardware is constantly and rapidly evolving due to the insatiable need for more realistic and complex graphics, the book avoids getting too specific. To quote the authors, The field is rapidly evolving, and so it is a moving target. This lack of specificity doesn't detract from the usefulness of the book, though. Instead, it works at a higher, more abstract level, describing approaches to rendering techniques using generic algorithms. It is up to the programmer to apply these methods to the specific program or system on which it is to be implemented. Real-Time Rendering describes some very complex methods, and this book is not for the average computer graphics creator. However, if you are working in an industry that depends on real-time rendered animation--like the gaming, medical, or military fields--or you are building the next-generation real-time render engine, this book will offer insight and concepts you can use to build some impressive software. -- Mike Caputo

This book is a great collection of almost current practical rendering techniques.

Very basic theories/ideas for game engine, basis for game client programming as well as the necessary knowledge for understanding DirectX and OpenGL, in short, almost all stuffs of graphical rendering topics are covered by this book.

I think of that this book consists of three major parts by three different coauthors. (But the consistency of the entire book content is kept well; the related issues in different sections/chapters are referred/linked with each other exactly.)

It covers,

BASIC SUFF AND LIGHT (Basic Vector Calculus, Basic Optical Science)
- Basic logical tools for graphics - Matrix, Projection, Terminologies,
- Basic graphics concepts - Aliasing, Morphing, Sensor, Color, Texture,
- Characteristics of light - Spectrum of Light, Irradiance, Reflection/Refraction, etc.

RENDERING TECHNIQUE (More Artificial Technique)
- Illumination, Shading, Mapping, Effects, Bill boarding, Fogging, Silhouette, Cartoon-Rendering, etc.

GEOMETRY AND PERFORMANCE
- Line, Surface, Culling, LOD, Space Partitioning, Collision, Performance, GPU Pipeline, etc.
It cites a lot of references on graphics/rendering/shader books, mathematics, journals, treaties and articles on the both side of online and offline. But the subjects/content of each section are written in brief and clear way to understand them due to that this book tries to avoid using complex formulae or equations. Recommending to find/read the original references to get more details for those kind of formulae, this book focuses on the major flow of how the techniques are derived and applied to.

Again, it is very helpful to people who want to get a stout understanding for rendering technology.

Strongly Related Books with this;

Thanks.

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