
Contents



	Foreword	ix
	Preface	xiii
	Acknowledgments	xix
1	Ray Tracer Design and Programming	1
2	Some Essential Mathematics	17
3	Bare-Bones Ray Tracing	45
4	Antialiasing	81
5	Sampling Techniques	93
6	Mapping Samples to a Disk	119
7	Mapping Samples to a Hemisphere	125
8	Perspective Viewing	133
9	A Practical Viewing System	151
10	Depth of Field	167
11	Nonlinear Projections	181
12	Stereoscopy	197
13	Theoretical Foundations	217
14	Lights and Materials	245

15	Specular Reflection	279
16	Shadows	293
17	Ambient Occlusion	309
18	Area Lights	325
19	Ray-Object Intersections	353
20	Affine Transformations	397
21	Transforming Objects	417
22	Regular Grids	443
23	Triangle Meshes	473
24	Mirror Reflection	493
25	Glossy Reflection	529
26	Global Illumination	543
27	Simple Transparency	561
28	Realistic Transparency	593
29	Texture Mapping	643
30	Procedural Textures	671
31	Noise-Based Textures	691
	References	733
	Index	745