

1. Record Nr.	UNISA996418163803316
Autore	Matsushima Kyoji
Titolo	Introduction to Computer Holography [[electronic resource] ] : Creating Computer-Generated Holograms as the Ultimate 3D Image // by Kyoji Matsushima
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2020
ISBN	3-030-38435-7
Edizione	[1st ed. 2020.]
Descrizione fisica	1 online resource (XIV, 461 p. 389 illus., 193 illus. in color.)
Collana	Series in Display Science and Technology, , 2509-5900
Disciplina	621.3675
Soggetti	Lasers Photonics Signal processing Image processing Speech processing systems Optics Electrodynamics Optics, Lasers, Photonics, Optical Devices Signal, Image and Speech Processing Classical Electrodynamics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Chapter 1 - Introduction -- Chapter 2 - Overview of computer holography -- Chapter 3 - Introduction to wave-optics -- Chapter 4 - The Fourier Transform and Mathematical Preliminaries -- Chapter 5 - Diffraction and Field Propagation -- Chapter 6 - Numerical Field Propagation Between Parallel Planes -- Chapter 7 - Holography -- Chapter 8 - Computer Holography -- Chapter 9 - The Rotational Transform of Waveeld -- Chapter 10 - The Polygon-Based Method -- Chapter 11 - The Silhouette Method -- Chapter 12 - Shifted Field Propagation -- Chapter 13 - Simulated Reconstruction Based on Virtual Imaging -- Chapter 14 - Digitized Holography -- Chapter 15 - Fabrication of High-Dinition CGH.

This book covers basic- to expert-level applications in computer holography, a strong candidate for the ultimate 3D display technology. The computer holography developed in the course of the past decade represents the basis of wave optics. Accordingly, the book presents the basic theory of wave optics and practical techniques for handling wave fields by means of the fast Fourier transform. Numerical techniques based on polygons, as well as mask-based techniques, are also presented for calculating the optical fields of virtual 3D models with occlusion processing. The book subsequently describes simulation techniques for very large-scale optical fields, and addresses the basics and concrete applications of simulation, offering a valuable resource for readers who need to employ it in the context of developing optical devices. To aid in comprehension, the main content is complemented by numerous examples of optical fields and photographs of reconstructed 3D images.

---