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Nota di contenuto	Intro -- Introduction to Infrared and Electro-Optical Systems Third Edition -- Contents -- Preface -- Acknowledgments -- Chapter 1 Introduction -- 1.1 Introduction to Imaging -- 1.2 Infrared and EO Systems -- 1.3 Wavelength Dependencies -- 1.4 Typical EO Scenario -- 1.5 Typical Infrared Scenario -- 1.6 Analytical Parameters -- 1.7 Sensitivity and Resolution -- 1.8 Linear Systems Approach -- 1.9 Summary -- 1.10 Guide to the References -- References -- Chapter 2 Mathematics -- 2.1 Complex Functions -- 2.2 Common One-Dimensional Functions -- 2.3 The 2-D Functions -- 2.4 Convolution and Correlation -- 2.5 The Fourier Transform -- 2.6 Fourier Transform Properties -- 2.7 Transform Pairs and Delta Function Properties -- 2.8 Probability -- 2.9 Important Examples -- 2.10 Guide to the References -- References -- Selected Bibliography -- Software -- Chapter 3 Linear Shift-Invariant Systems -- 3.1 Linear Systems -- 3.2 Shift Invariance -- 3.3 Basics of LSI Systems -- 3.4 Impulse Response -- 3.5 Transfer Function -- 3.6 System PSF and MTF Versus Component PSF and MTF -- 3.7 Spatial Sampling -- 3.8 Spatial Sampling and Resolution -- 3.9 Sampled Imaging Systems -- 3.10 Guide to the References -- References -- Selected Bilbiography -- Chapter 4 Diffraction -- 4.1 Electromagnetic Waves -- 4.2 Coherence -- 4.3 Fresnel and Fraunhofer Diffraction from an Aperture -- 4.3.1 Fresnel Diffraction -- 4.3.2

Fraunhofer Diffraction -- 4.4 Fraunhofer Diffraction from a Thin Lens -- 4.5 Thin Lens Optical System Diffraction PSF -- 4.6 Thin Lens Diffraction MTF -- 4.6.1 Modulation and MTF -- 4.6.2 Incoherent Diffraction MTF -- 4.6.3 Coherent Diffraction MTF -- 4.7 Calculation of Diffraction MTF -- 4.7.1 Circular Pupil: Coherent MTF -- 4.7.2 Circular Pupil: Incoherent MTF -- 4.8 Programs for Calculating Incoherent Diffraction MTF -- 4.9 Applications of Diffraction Theory. 4.9.1 Frequency Analysis of Optical Systems -- 4.9.2 Application to Geometric Optics -- 4.9.3 PSF of Distributed Aperture -- 4.9.4 Optical Image Processing -- 4.9.5 Stellar Interferometry -- 4.9.6 Apodization -- 4.9.7 Detector MTF from the Fraunhofer Diffraction Pattern -- 4.10 Light Goes Around Corners: The Poisson Spot -- References -- Chapter 5 Sources of Radiation -- 5.1 Radiometry and Photometry -- 5.1.1 Radiometric Units -- 5.1.2 Photometric Units -- 5.2 Infrared Targets and Backgrounds -- 5.2.1 Blackbody Radiation -- 5.2.2 Emissivity -- 5.2.3 Equivalent Differential Temperature (ΔT) -- 5.2.4 Apparent Differential Temperature (Apparent ΔT) -- 5.3 EO Targets and Backgrounds -- 5.3.1 External Sources -- 5.3.2 Contrast -- 5.4 Other Sensitivity Considerations -- 5.4.1 Bidirectional Reflectance Distribution Function -- 5.4.2 Color Considerations -- 5.5 Target and Background Spatial Characteristics -- 5.5.1 Bar Target Representation of Targets -- 5.5.2 Target ΔT and Characteristic Dimension -- 5.5.3 Summary of Target Characteristics -- 5.5.4 Clutter -- 5.5.5 Simulation of Target Characteristics -- 5.6 Typical Mid-Wave and Long-Wave Contrasts and Solar Effects -- References -- Selected Bibliography -- Chapter 6 Atmospheric -- 6.1 Atmospheric Components and Structure -- 6.2 Atmospheric Transmission -- 6.3 Absorption -- 6.4 Scattering -- 6.5 Path Radiance -- 6.6 Turbulence -- 6.7 Atmospheric Modulation Transfer Function -- 6.8 Models and Tools -- 6.9 Model Background Discussion -- 6.10 Some Practical Considerations -- References -- Chapter 7 Optics -- 7.1 Light Representation and the Optical Path Length -- 7.2 Reflection and Snell's Law of Refraction -- 7.3 The Thin Lens, Ray-Tracing Rules, and Gauss's Equation -- 7.4 Spherical Mirrors -- 7.5 Modeling the Thick Lens -- 7.6 Vergence -- 7.7 Multiple-Lens Systems -- 7.8 FOV. 7.9 Resolution -- 7.10 Aperture Stop, Pupils, and Rays -- 7.11 f-Number and Numerical Aperture -- 7.12 Telescopes and Angular Magnification -- 7.13 MTF -- 7.14 Aberrations -- 7.15 Optical Materials -- 7.16 Cold Stop and Cold Shield -- 7.17 A Typical Optical System -- 7.18 Diffraction Blur -- References -- Chapter 8 Detectors -- 8.1 Types of Detectors -- 8.1.1 Photon Detectors -- 8.1.2 Photoconductors -- 8.1.3 Photovoltaic -- 8.1.4 Photoemissive -- 8.1.5 Thermal Detectors -- 8.1.6 Bolometers -- 8.1.7 Pyroelectric Detectors -- 8.2 CCD and ROIC -- 8.2.1 CCD -- 8.2.2 Multiplexed Analog Readout -- 8.2.3 Column ADC ROIC or D-ROIC -- 8.3 Detector Sensitivity Analysis -- 8.3.1 Quantum Efficiency -- 8.3.2 Responsivity -- 8.3.3 Sensitivity -- 8.3.4 Detector Angular Subtense -- 8.3.5 FPA and Detector Noise (Including Detector $1/f$ Noise) -- 8.3.6 Dark Current and Rule'07 -- 8.3.7 $1/f$ Noise -- 8.3.8 Photon Shot Noise -- 8.3.9 FPA and ROIC Noise (Including Fixed Pattern Noise) in Staring Systems -- 8.3.10 BLIP -- 8.4 EO Systems: Staring and Scanning Configurations -- 8.4.1 Raster Scan Systems -- 8.4.2 Linear Scan and TDI -- 8.4.3 Staring Systems: Focal Plane Arrays -- 8.5 Detector Transfer Functions -- 8.6 EO Detectors: Materials and Technology -- 8.6.1 MWIR and LWIR Photon Detectors -- 8.6.2 Far Infrared: VLWIR -- 8.6.3 Uncooled Bolometer -- 8.6.4 Visible and NIR -- 8.7 New and Emerging Infrared Detector Technology -- 8.7.1 Ultra-Large-Format Arrays and Small Pitch -- 8.7.2 Dual-Band Detectors (Third Generation)

-- 8.7.2 Dual-Band Detectors (Third Generation) -- 8.7.3 Direct Bond Hybridization -- 8.7.4 Advanced ROIC Technology and Digital Pixel -- 8.7.5 Next Generation Imagers -- 8.7.6 Avalanche Photodiodes, Laser Range Gating, and Active and Passive Detectors -- References -- Chapter 9 Electronics -- 9.1 Detector Circuits. 9.2 Conversion of Spatial and Temporal Frequencies -- 9.3 Electronics Transfer Function -- 9.4 Noise -- 9.4.1 Johnson Noise -- 9.4.2 $1/f$ Noise -- 9.4.3 Shot Noise -- 9.5 MTF Boost Filter -- 9.6 Digital Filter MTF -- 9.7 CCDs -- 9.8 Uniformity Correction or NUC -- 9.9 Design and Construction of Camera Electronics -- References -- Chapter 10 Image Processing -- 10.1 Basics of Sampling Theory -- 10.2 Applications of Image Filtering -- 10.2.1 Localized Contrast Enhancement -- 10.2.2 Boost Filtering -- 10.2.3 Sensor Design Considerations -- 10.3 Super-Resolution Image Reconstruction -- 10.3.1 Image Acquisition: Microdither Scanner Versus Natural Jitter -- 10.3.2 Subpixel Shift Estimation -- 10.3.3 Image Reconstruction -- 10.3.4 Example and Performance Estimates -- 10.4 Image Fusion -- 10.4.1 Fusion Algorithms -- 10.5 Scene-Based NUC -- 10.6 Deep Learning -- 10.6.1 Super-Resolution -- 10.6.2 Contrast Enhancement -- 10.6.3 Image Fusion -- 10.6.4 Scene-Based NUC -- 10.7 Summary -- References -- Chapter 11 Displays, Human Perception, and Automatic Target Recognizers -- 11.1 Displays -- 11.2 CRTs -- 11.2.1 CRT Example Results -- 11.3 LEDs -- 11.4 LCDs -- 11.5 Plasma Displays -- 11.6 Emerging Display Technologies -- 11.7 Sampling and Display Processing -- 11.8 Human Perception and the Human Eye -- 11.9 MTF of the Eye -- 11.10 CTF of the Eye -- 11.11 Automatic Target Recognition -- References -- Chapter 12 Historical Performance Models -- 12.1 Introduction -- 12.2 Johnson Model Fundamentals -- 12.3 The MRT Model -- 12.4 The First FLIRs and Models -- 12.5 Model Improvements for Resolution and Noise -- 12.6 Incorporating Eye Contrast Limitations -- 12.7 Model Improvement to Add Sampling -- 12.8 Other Improvements Prior to the TTP Metric -- 12.9 The TRM3 Model -- 12.10 Triangle Orientation Discrimination (TOD). 12.11 Imager Modeling, Measurement, and Field Performance -- References -- Chapter 13 Contrast Threshold and TTP Metric -- 13.1 CTF of the Naked Eye -- 13.2 CTF for the Eye-Display System -- 13.3 Validation of Eye-Display CTF -- 13.4 Eye-Display Contrast Threshold Model -- 13.4.1 Eye-Display Contrast Threshold Model -- 13.4.2 Define Functions -- 13.4.3 Define Input Parameters -- 13.4.4 Run the Program -- 13.4.5 Comparison with Existing Models -- 13.5 TTP Metric and Range Performance Mode -- 13.6 Guide to the References -- References -- Appendix 13A -- 13A.1 Direct Calculation of CTF_{eye-disp,h} -- Chapter 14 EO and Infrared System Performance and Target Acquisition -- 14.1 Sensitivity and Resolution -- 14.2 NETD -- 14.3 EO Noise and Noise Equivalent Irradiance -- 14.3.1 Noise Equivalent Irradiance -- 14.4 3-D Noise -- 14.5 MTF -- 14.6 MRTD (Including 2-D MRT) -- 14.6.1 2-D MRT -- 14.7 Target Acquisition with Limiting Frequency (Johnson's N50) -- 14.8 System CTF -- 14.9 Target Acquisition with the Target Task Performance (TTP) Metric (and Vollmerhausen's V50) -- 14.10 Target Sets -- 14.11 Classic ISR, NIIRS, and General Image Quality -- 14.11.1 NIIRS -- 14.11.2 GIQE Model -- 14.12 The Performance Benefits of Dual-Band Infrared Imagers -- 14.12.1 Dual-Band Imagers -- 14.12.2 Long-Range Target Detection and Identification -- 14.12.3 Imaging with Hot Targets in the FOV -- 14.12.4 Cold-Weather Performance -- 14.12.5 Imaging Through Turbulence -- 14.12.6 Imaging Through Fog-Oil Smoke -- 14.12.7 Target Contrast (Up Close) -- 14.12.8 ATR Performance -- 14.12.9 Motion Blur and Integration Time -- 14.12.10 Target Spectral

Exploitation -- 14.12.11 Signal and Image Processing: Boost, Local Area Contrast Enhancement -- 14.12.12 Imaging Through Fog, High Humidity, Rain, Haze, Smoke, and Dust -- 14.12.13 Discussion -- 14.13 Small Detector Infrared Systems.
14.13.1 Small Detector Infrared System Fundamentals.

Sommario/riassunto

This newly revised and updated edition offers a current and complete introduction to the analysis and design of Electro-Optical (EO) imaging systems. The Third Edition provides numerous updates and several new chapters including those covering Pilotage, Infrared Search and Track, and Simplified Target Acquisition Model. The principles and components of the Linear Shift-Invariant (LSI) infrared and electro-optical systems are detailed in full and help you to combine this approach with calculus and domain transformations to achieve a successful imaging system analysis. Ultimately, the steps described in this book lead to results in quantitative characterizations of performance metrics such as modulation transfer functions, minimum resolvable temperature difference, minimum resolvable contrast, and probability of object discrimination. The book includes an introduction to two-dimensional functions and mathematics which can be used to describe image transfer characteristics and imaging system components. You also learn diffraction concepts of coherent and incoherent imaging systems which show you the fundamental limits of their performance. By using the evaluation procedures contained in this desktop reference, you become capable of predicting both sensor test and field performance and quantifying the effects of component variations. The book contains over 800 time-saving equations and includes numerous analyses and designs throughout. It also includes a reference link to special website prepared by the authors that augments the book in the classroom and serves as an additional resource for practicing engineers. With its comprehensive coverage and practical approach, this is a strong resource for engineers needing a bench reference for sensor and basic scenario performance calculations. Numerous analyses and designs are given throughout the text. It is also an excellent text for upper-level students with an interest in electronic imaging systems.
