

1. Record Nr.	UNINA9910799223603321
Autore	Yin Chun
Titolo	Infrared Thermographic NDT-based Damage Detection and Analysis Method for Spacecraft / / by Chun Yin, Xuegang Huang, Xutong Tan, Junyang Liu
Pubbl/distr/stampa	Singapore : , : Springer Nature Singapore : , : Imprint : Springer, , 2024
ISBN	981-9982-16-2
Edizione	[1st ed. 2024.]
Descrizione fisica	1 online resource (XVI, 267 p. 189 illus., 172 illus. in color.)
Disciplina	621.382
Soggetti	Signal processing Aerospace engineering Astronautics Control engineering System theory Control theory Signal, Speech and Image Processing Aerospace Technology and Astronautics Control and Systems Theory Systems Theory, Control
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	1 Background and Requirements -- 2 Infrared Feature Extraction and Damage Reconstruction -- 3 Reconstructed Thermal Image Fusion based on Multi-objective Guided Filtering -- 4 Stitching Technique for Reconstructed Thermal Images -- 5 Weight Vector Adjustment-based Multi-objective Segmentation of Thermal Images -- 6 Defects Positioning Method for Large Size Specimen -- 7 Defect Edge Detection and Quantitative Calculation of Reconstructed Thermal Images.
Sommario/riassunto	The book focuses on infrared thermographic NDT systems and approaches. Both principles and engineering practice are covered, with more emphasis on the engineering practice of spacecraft damage detection and analysis. This is achieved by providing an in-depth study of several major topics such as infrared feature extraction, damage

reconstruction, reconstructed image fusion, reconstructed image stitching, reconstructed image segmentation, defect positioning, defect edge detection and quantitative calculation. A number of application cases are discussed in detail, including impact damage to single-layer and multi-layer protective configurations, simple impact damage, and complex multi-type impact damage. The comprehensive and systematic treatment of practical problems in infrared detection and spacecraft damage identification is one of the main features of this book, which is particularly suitable for those interested in learning practical solutions in infrared detection technology. This book can benefit researchers, engineers, and graduate students in the fields of aerospace design and manufacturing, spacecraft environmental engineering, and non-destructive testing technology, etc.

---