1. Record Nr. UNINA9910299162403321

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Titolo	Contactless 3D Fingerprint Identification / / by Ajay Kumar
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2018
ISBN	3-319-67681-4
Edizione	[1st ed. 2018.]
Descrizione fisica	1 online resource (129 pages)
Collana	Advances in Computer Vision and Pattern Recognition, , 2191-6586
Disciplina	363.258
Soggetti	Biometry Artificial intelligence Computational intelligence Computers Law and legislation Biometrics Artificial Intelligence Computational Intelligence Legal Aspects of Computing
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction to Trends in Fingerprint Identification -- 3D Fingerprint Image Acquisition Methods -- Contactless and Live 3D Fingerprint Imaging -- 3D Fingerprint Acquisition Using Colored Photometric Stereo -- 3D Fingerprint Image Preprocessing and Enhancement -- Representation, Recovery and Matching of 3D Minutiae Template -- Other Methods of 3D Fingerprint Matching -- Individuality of 3D Fingerprints.
Sommario/riassunto	This important text/reference presents the first dedicated review of techniques for contactless 3D fingerprint identification, including novel and previously unpublished research. The text provides a systematic introduction to 3D fingerprint identification, covering the latest advancements in contactless 2D and 3D sensing technologies, and detailed discussions on each key aspect in the development of an effective 3D fingerprint identification system. Topics and features:

Introduces the key concepts and trends in the acquisition and identification of fingerprint images, and a range of 3D fingerprint imaging techniques Proposes a low-cost method for online 3D fingerprint image acquisition, and an efficient 3D fingerprint imaging approach using coloured photometric stereo Describes pre-processing operations on point cloud 3D fingerprint data, and explains the specialized operations for reconstructing 3D fingerprints from live finger scans Examines the representation of minutiae in 3D space, providing details on recovering these features from point cloud data, and on matching such 3D minutiae templates Reviews various 3D fingerprint matching methods, including binary surface code-based approaches and a tetrahedron-based matching approach Discusses the uniqueness of 3D fingerprints, evaluating the benefits of employing 3D fingerprint identification over conventional 2D fingerprint techniques This unique work is a must-read for all researchers seeking to make further advances in this area, towards the exciting opportunities afforded by contactless 3D fingerprint identification for improving the hygiene, user convenience, and matching accuracy of fingerprint biometric technologies. Dr. Ajay Kumar is an Associate Professor in the Department of Computing at the Hong Kong Polytechnic University. He has previously served as an Assistant Professor at the Department of Electrical Engineering, IIT Delhi. He is a Fellow of IEEE and IAPR. His other publications include the Springer title Deep Learning for Biometrics.