1.	Record Nr.	UNINA9910255014703321
	Titolo	Algorithmic advances in Riemannian geometry and applications : for machine learning, computer vision, statistics, and optimization / / edited by Hà Quang Minh, Vittorio Murino
	Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2016
	Edizione	[1st ed. 2016.]
	Descrizione fisica	1 online resource (XIV, 208 p. 55 illus., 51 illus. in color.)
	Collana	Advances in Computer Vision and Pattern Recognition, , 2191-6586
	Disciplina	516.373
	Soggetti	Pattern perception
		Computational intelligence
		Statistics
		Computer science—Mathematics
		Computer science - Mathematics
		Artificial intelligence
		Mathematical statistics
		Pattern Recognition
		Computational Intelligence
		Statistics and Computing/Statistics Programs
		Mathematical Applications in Computer Science
		Artificial Intelligence
		Probability and Statistics in Computer Science
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
	Nota di contenuto	Introduction -- Bayesian Statistical Shape Analysis on the Manifold of Diffeomorphisms -- Sampling Constrained Probability Distributions using Spherical Augmentation -- Geometric Optimization in Machine Learning -- Positive Definite Matrices: Data Representation and Applications to Computer Vision -- From Covariance Matrices to Covariance Operators: Data Representation from Finite to Infinite-Dimensional Settings -- Dictionary Learning on Grassmann Manifolds

-- Regression on Lie Groups and its Application to Affine Motion Tracking -- An Elastic Riemannian Framework for Shape Analysis of Curves and Tree-Like Structures.

Sommario/riassunto	This book presents a selection of the most recent algorithmic advances in Riemannian geometry in the context of machine learning, statistics, optimization, computer vision, and related fields. The unifying theme of the different chapters in the book is the exploitation of the geometry of data using the mathematical machinery of Riemannian geometry. As demonstrated by all the chapters in the book, when the data is intrinsically non-Euclidean, the utilization of this geometrical information can lead to better algorithms that can capture more accurately the structures inherent in the data, leading ultimately to better empirical performance. This book is not intended to be an encyclopedic compilation of the applications of Riemannian geometry. Instead, it focuses on several important research directions that are currently actively pursued by researchers in the field. These include statistical modeling and analysis on manifolds,optimization on manifolds, Riemannian manifolds and kernel methods, and dictionary learning and sparse coding on manifolds. Examples of applications include novel algorithms for Monte Carlo sampling and Gaussian Mixture Model fitting, 3D brain image analysis,image classification, action recognition, and motion tracking.